The Builder

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Leading Article

Meeting the Package-deal Challenge

IF THERE IS AN ARCHITECT with a commercial practice who is not worried about the activities of the package deal in building, then he is either extremely efficient or remarkably unobservant. For in one of its forms the package deal (essentially a contract between an industrialist and a developer by which the latter undertakes to deliver to the former a given floor area of accommodation on a selected site by an agreed time and for an inclusive price) creates such a chasm between architect and client that the two may never meet in any form of professional relationship. As such not architect and client only may suffer but architecture itself.

Arguments in favour of the 'all-in' contract are only too obvious, especially to the self-styled 'practical' industrialist who likes the idea of an agency which takes all worries off his shoulders and guarantees an end-product specific as to completion date and cost—provided always that he does not interfere after initial instructions have been given. If he does interfere or change his mind, then the ends of the 'package' may come undone, to his grief and cost.

There are nevertheless quite a number of building firms of repute which give a fair deal, and architects who wish to fight the growth of a system that they feel to be inimical to their clients' and their own interests will do well to learn from these and to shift the fight to other grounds. These grounds have been well described in a letter from MR. ALEX GORDON, ARIBA, published in 'The Builder' of February 10; in essence our correspondent says that there is more to architecture than the speedy erection of a structure, and that a fixed price for a building is not necessarily a fair one. He points out that the architect, both by his training in planning and by his legal position as client's agent in dealing with the builder, performs a service to the client which is uniquely his, and is lost when a package deal is made.

All this is true. and in a world where all developers were informed and experienced would need no endorsement. The architect, however, will do well to accept the fact that the package deal is on the increase and that he must devise a no less efficient alternative if he is to prevent heavy inroads being made into his legitimate practice, inroads which are assisted to no inconsiderable degree by the freedom given to the builder but denied the architect to advertise his services. Is there such an effective alternative?

Any solution must take into account two factors which are the main planks of the package-dealer's platform—price and speed of completion of the building. Of these, speed would seem to be the more important. With so much building being done for investment, cost is relatively unimportant so long as once agreed it is held; speed is more vital as it affects the handing-over date and is really the essence of the contract. It is here that the all-in

package contract achieves its popularity, for with design, services and construction under his own control, the package-dealer can organise for a known date. Thus the architect who wishes to compete must organise for speed of construction and also for control of cost.

A number of architectural firms are so organising themselves as consortia with structural services engineers and with quantity surveyors; these consortia have as their aim so to organise work that the time-consuming period of finalising contract drawings and details is carried over, after the preparation of the bills of quantities, into the early contract period. In fact, as soon as sketch designs are approved by the client, the attention of the whole team is concentrated on giving the quantity surveyor sufficient information to produce bills of quantities on which information the contract drawings will subsequently be based and completed. The contractor, who can be selected by open tendering in the normal way, thus makes an earlier start. This system is, in fact, the basis on which contractors prepare their package deals, the secret of which is that the drawings are produced while the foundations, drainage and early structural work are being done. All work is re-measured as it proceeds, and the final account is produced more quickly than with a variation account.

There may be other ways of fighting-off the package-deal challenge, but these must take account of the factors of known cost and completion date and also ability to quote clients an inclusive fee. Hardly a week passes without an announcement by some architectural firm that it has reorganised to meet the situation. Greater efficiency in architects' offices may well come from this challenge; another consequence may be a concentration of more work in fewer offices. In fact, the possible changes in the architect's professional life consequent on the emergence of the new phenomenon are such that a full-dress inquiry into causes and effects seems called for, perhaps by some Trust or agency independent of the building industry.

Notes of the Week

Prefabricated Farm Buildings ; Michele Sanmicheli ; Co-operation in Planning

MR. WILLIAM DEEDES has done well to call attention in Parliament to the detrimental effect that prefabricated farm buildings often have on the appearance of the countryside. No doubt most of these buildings serve their purpose quite efficiently, but in form, colour of materials and siting they often leave much to be desired. No one would wish farmers to spend money on unnecessarily costly materials or on features designed for purely aesthetic effect. All that is asked is that the buildings should be good in form, colour and siting. It does not appear to be widely enough realised that good design and siting need cost no more than bad. The prefab manufacturers who at present lack it would be well advised to seek proper architectural advice.

In the meantime it is encouraging to know that the National Farmers' Union, some of the manufacturers and the Ministry of Agriculture itself are all well disposed towards the idea of better design, and that efforts to achieve it are being made by, for example, the Country Landowners' Association and Council of Industrial Design. In his reply to Mr. Deedes Sir Keith Joseph, Parliamentary Secretary to the Ministry of Housing and Local Government, gave a largely reassuring account of what is being done officially in this matter, and it would appear that there is the possibility of a technical publication on the design of farm buildings being produced by the two Ministries concerned, in association with the Council of Industrial Design. This is excellent news, and the sooner it appears the better. It is equally urgent to seek out the manufacturers of unsatisfactory prefabricated buildings and point out to them the error of their ways. So long as poor designs are being produced it is odds on their being used, as we have seen in the case of ugly concrete lamp standards. An account of the debate in Parliament is given on page 459.

Michele Sanmicheli

IN 1960, in Verona, there was an exhibition to commemorate the fourth centenary of the death of Michele Sanmicheli. Now (writes Peter Howell) due to the combined efforts of the Verona City Authorities, Professor Pietro Gazzola and the RIBA it has been brought to London. This excellent exhibition of photographs, models, and casts is to be seen at the premises of the Royal Institute until March 29.

The Italian architect Michele Sanmicheli was born in Verona probably in 1484. Between 1500 and 1509 he was in Rome which at that time fostered a pure classical form of renaissance architecturt. During the following twenty years Sanmicheli was the surveyor to the Cathedral of Orvieto. It might be pointed out, as Dr. Peter Murray does in his introduction to the catalogue, that Michele Sanmicheli was 'no prodigy,' that his important work was done when he was past his fortieth year, and that he spent a considerable amount of his time and ability in the design and construction of fortifications. Neither of these factors make Sanmicheli a lesser man; it was his place in the matrix of events that formed the history of architecture of the renaissance in Italy that is important. He carried the relative austerity of style of the south of Italy into the rich field of the north and succeeded in joining the two; he stood in time and region between Bramante and Palladio. Even the fortifications that he designed show this point. Most of his buildings carry an almost incredible rustication upon a coldly logical rhythm and symmetry.

The exhibition is, as one would expect, essentially Italian to the extent that the captions are still in Italian language. There are no dates to be seen. This might amount to a major criticism but for the fact that however one looks at Michele Sanmicheli he is no longer important but simply extremely interesting. The photographs are completely unselfconscious as to what they contain. The power lines across buildings, buildings under repair and so on will make the architectural revivalists beat their tambourines in horror; they are exciting photographs. The models are large and made of wood, large enough to make one want to get inside them. This is an enjoyable exhibition.

Co-operation in Planning

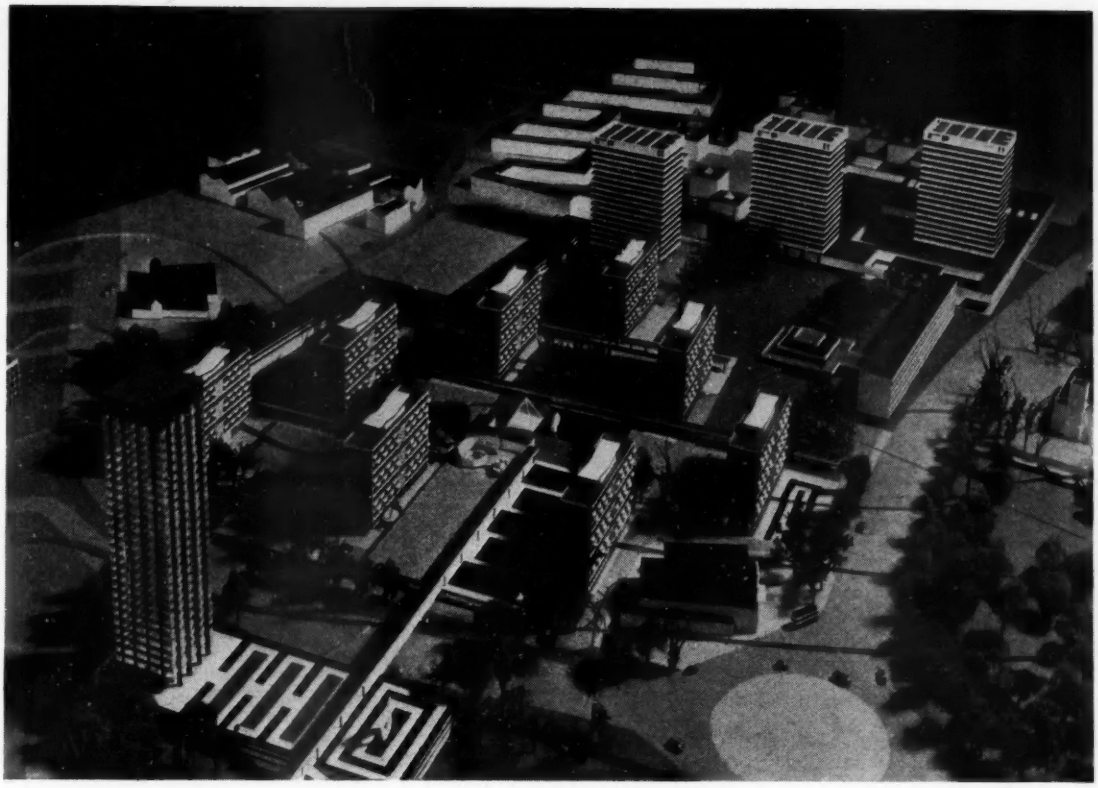
WHILE THE ADVOCATES of a Ministry of Planning, to co-ordinate Government activities in this sphere, may be doomed to disappointment, there is encouraging news of greater co-operation between the two Government Departments most concerned with development at the present time, namely the Ministries of Housing and Local Government and Transport. Speaking at the annual dinner of the Town Planning Institute, a report of which appears on another page, Dame Evelyn Sharp, Permanent Secretary to the Ministry of Housing, said that the two Ministries in question were in process of establishing joint working parties to study problems of joint interest.

Poet's Corner

IN A RECENT ISSUE a correspondent traced the origin of the name of Bradshaw Gass and Hope, the Bolton firm of architects. This has inspired another correspondent to the following:

Gass and Bradshaw,
Hope and Gass,
Research worker's
Big impasse.
Airs about a
Partner's name!
Gass and Bradshaw
All the same.
Bradshaw, Gass *and*
Hope to me
Are simply architects.
Who'll agree?

JENNY WREN



aerial view of model

Hillfields Comprehensive Redevelopment, Coventry

ARTHUR LING, BA, FRIBA, MTPI, city architect

THE PRESENT BOUNDARIES of the Hillfields comprehensive development area of 163 acres define a first stage (based on age and condition of property) in the ultimate redevelopment of a larger neighbourhood. Convenience of living near the City centre is of considerable importance, and demand for all types of accommodation is high in spite of the present drab and depressing environment of the area.

Accommodation now proposed to be provided in Hillfields is based on comparison of existing population and family structure in Hillfields and the City as a whole. 53 per cent of the existing 2,199 dwellings in the Comprehensive Development Area will probably be declared unfit for habitation by the Chief Public Health Inspector during the next five years.

The existing population of Hillfields is about 5,600; with provision of additional amenities and rebuilding at a density of approximately 117 persons per acre, slightly more than the existing number could be rehoused. Provision will be made for large and medium-sized families in houses; one-child families will have flats or maisonettes; single persons and childless couples will live in flats. It is assumed that most old persons can be accommodated in flats but bungalows and an old persons' home are also provided. This development provides for approximately 70 per cent of households in flats and 30 per cent in houses, in residential areas totalling 50 acres.

The form of development is most strongly influenced by the pedestrian circulation system. A main pedestrian route leads from the City centre past Swanswell Pool, and through an amenity open space between high flats into a pedestrian shopping centre. Two other pedestrian ways lead from this centre providing a pedestrian link between houses, play areas, schools, shops, community centres and areas of open space within the limits of the Comprehensive Development Area. These routes lead respectively to the Primrose Hill recreation ground and Gosford Green. The area around Queen-street where the first new block stands (this is 'Phœnix House,' illustrated in 'The Builder' of November 18, 1960) is developed with further blocks of flats of 11 and 17 storeys at a high density of 150 habitable rooms per acre. The other areas to the east and south are developed with smaller blocks of flats and family houses at lower densities of about 90 habitable rooms per acre. It is intended that garages and reserved car parking spaces should be provided on the edges of residential areas in the ratio of one per dwelling. A new district centre is proposed as well as two smaller groups and a number of 'corner type' shops dispersed along the main pedestrian routes. Some public houses will be retained and others rebuilt. The existing County Primary School, South-street, is to be extended and sites for a further primary school and for a comprehensive school are allocated.

Most of the larger industries in the area will remain on present sites. Other industries scattered throughout the area will be relocated in a defined industrial zone or relocated outside the Hillfields area.

Churchill Gardens, Pimlico
Stage 3

For Westminster City Council

POWELL & MOYA, architects

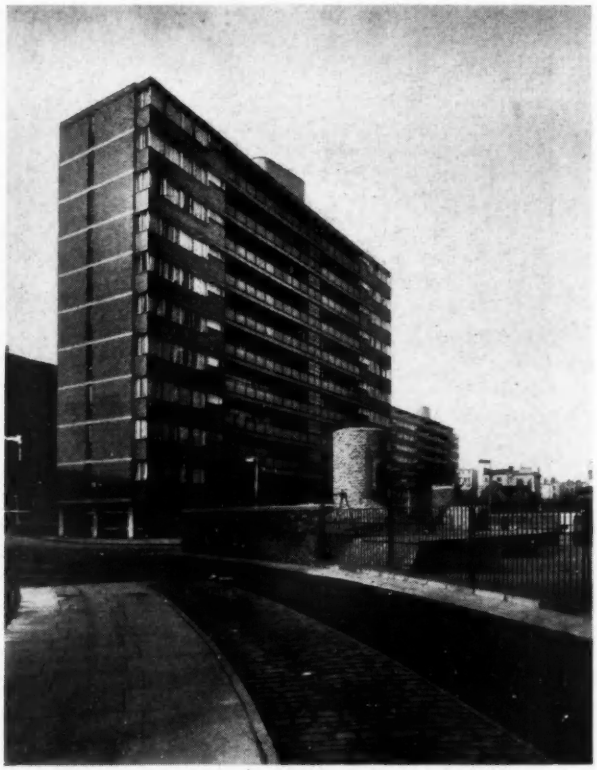
ROBERT HUDDLESTON, J. A. GRIFFITHS, assistant architects

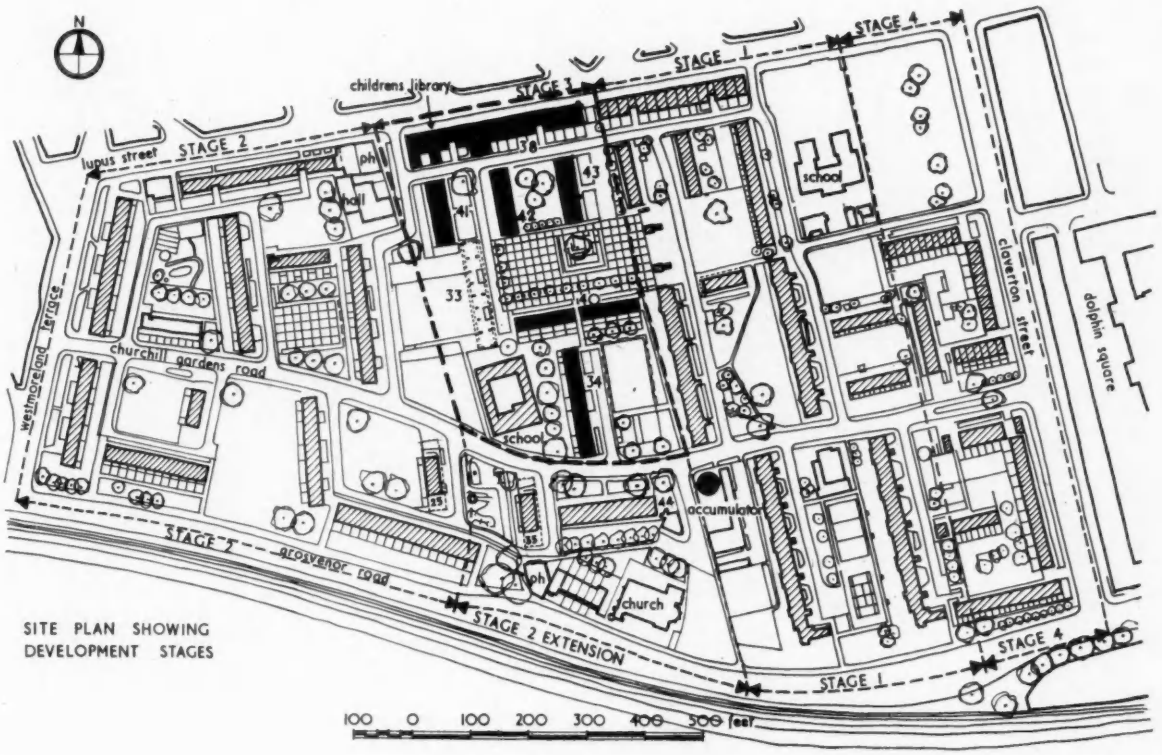
KENNEDY & DONKIN, consultant heating engineers

E. C. HARRIS & PARTNERS, quantity surveyors

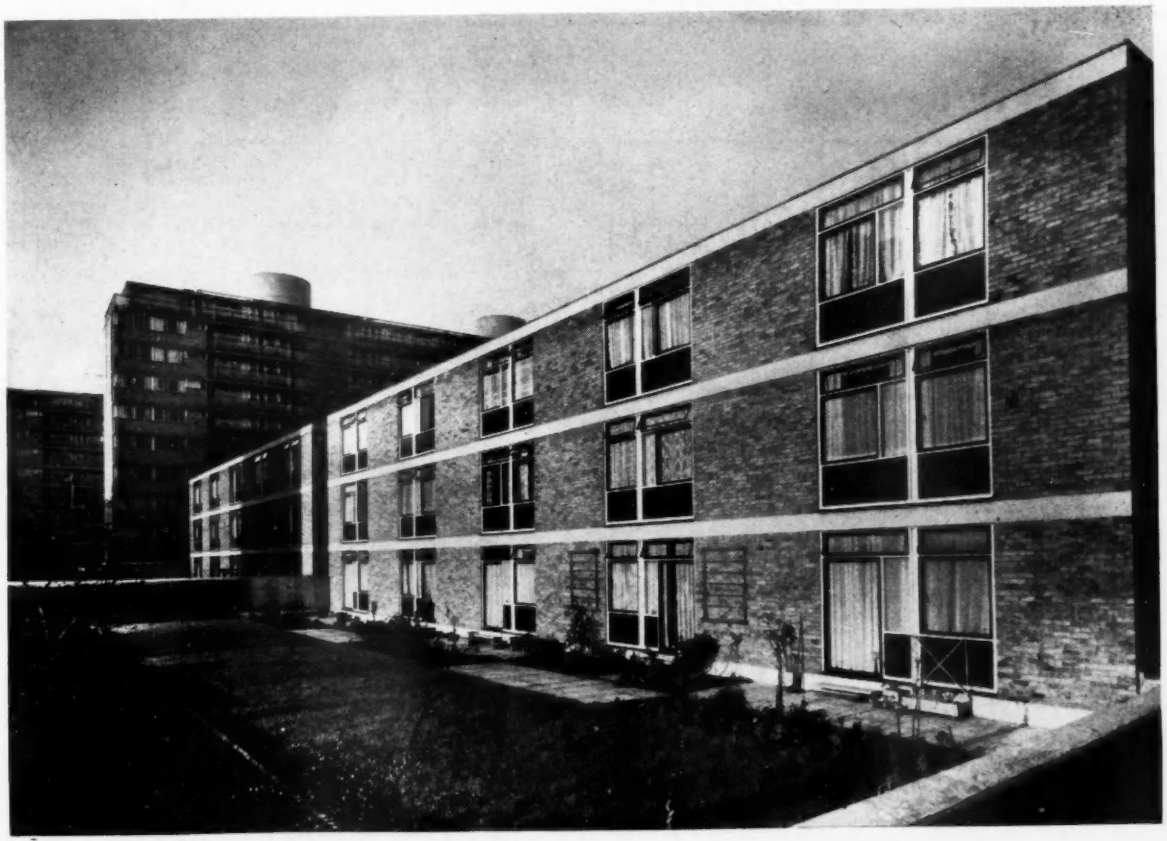
M. J. GLEESON (CONTRACTORS) LTD., general contractors

Right, children's playground between blocks 23 and 35 in section 2 extension. Below, block 44, and facing page, block 40, which run parallel with the river whilst high blocks are at right-angles in accordance with the competition scheme



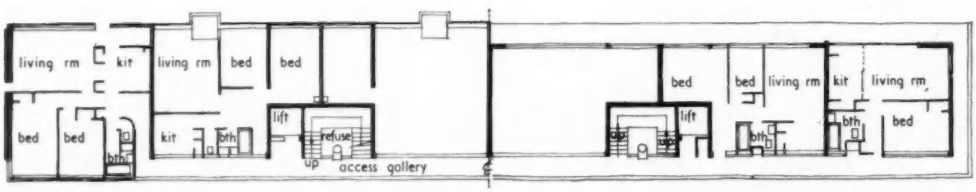


SITE PLAN SHOWING
DEVELOPMENT STAGES



block 33 facing the square, and block 40 on the left

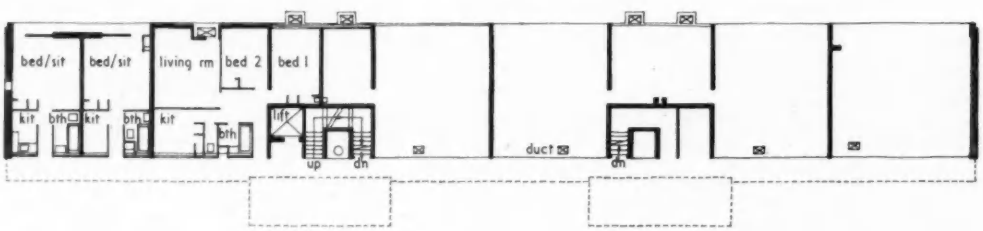
UPPER FLOORS BLOCKS 33 & 34



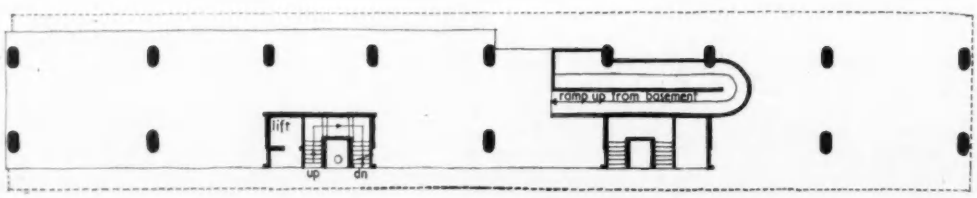
2ND TO 8TH FLOORS

9TH FLOOR

GROUND FLOOR BLOCK 34



GROUND FLOOR BLOCK 33
Scale : 1 in. = 32 ft.



THE THIRD SECTION of the Churchill Gardens housing scheme at Pimlico for the Westminster City Council has now been completed. This section comprises 344 flats and maisonettes, ten shops, a laundry, public lavatories, a post office and a children's library. Work was started on March 5, 1957, and the last flats were handed over during November, 1959.

The planning of Section III is in accordance with the original competition winning scheme which is based essentially on large blocks of flats being at right angles to the river and lower blocks of flats and maisonettes being parallel with the river. The buildings in this section, although generally similar in character to those of Section II, differ in respect of the design of the lower blocks which have been modified as a result of varied planning requirements. There are three tall blocks, one of seven storeys and two of ten storeys. The seven storey block runs parallel to Lupus-street and comprises six floors of maisonettes with ten shops, post office, children's library and public lavatories on the ground floor. This block is similar in design to De Quincey House which was completed as part of Section I of the scheme. The remaining two blocks are planned at right angles to the river and are staggered on plan, Bramwell House (block 34) being adjacent to Churchill Gardens-road and Blackstone House (block 33) on the axis of the main public square which is also a part of this section.

This block (33) has been raised on columns to allow pedestrian access to the square from the proposed estate hall which is shortly to be built on the west side. The east end of the square is bounded by Chaucer House, built in Section I of the scheme, which is also raised on columns to enable through access for pedestrians across the square.

In addition there are three four-storey flats and

sunken playground towards block 34

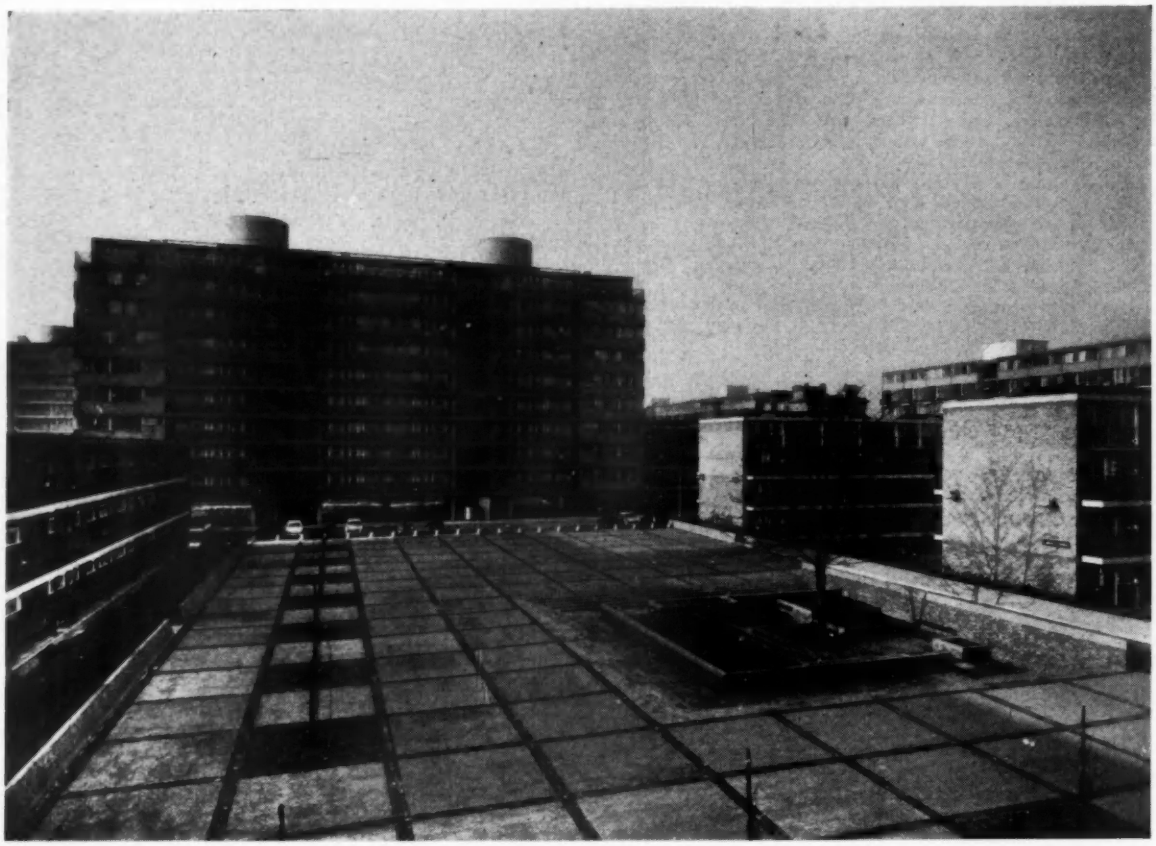
block 34, south-west corner

DENSITY TABLE

SECTION	GROSS AREA ACRES	NET HOUSING AREA ACRES	DWELLINGS	POPULATION	DWELLINGS PER ACRE	POPULATION PER ACRE
1	9·70	8·34	495	1815	59·3	218
2	10·88	10·49	586	1926	55·8	184
3	8·05	4·92	344	1046	70·0	212
4	3·49	3·49	258	667	74·0	191·4
TOTALS	32·12	27·24	1683	5454	64·8	201·35

DISTRIBUTION

SECTION	1 ROOM FLATS	2 ROOM FLATS	3 ROOM FLATS 3 PER'NS	3RM FLATS OR M'ETTES 4 PER'NS	4 ROOM FLATS OR M'TES	5 ROOM FLATS	5 ROOM HOUSES	TOTALS
1	14	36	-	160	269	16	-	495
2	82	10	32	392	42	-	28	586
3	76	34	8	170	56	-	-	344
4	71	116	-	27	44	-	-	258
TOTALS	243 (14·425%)	196 (11·64%)	40 (2·375%)	749 (44·5%)	411 (24·41%)	16 (·95%)	28 (1·7%)	1683



General view of the square towards block 33, with sunken garden in foreground. Paving is 12 ft. square panels of exposed aggregate separated by brick drainage channels. The square is planted with 22 fast-growing trees

maisonette blocks (41, 42, 43) sited at right angles to the north side of the square and one three-storey flat block (40) which runs parallel to the south side.

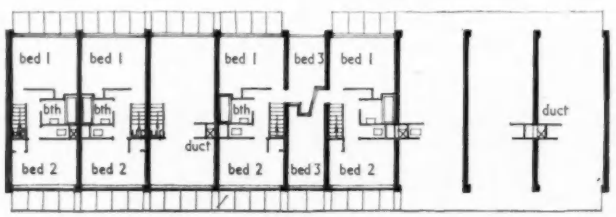
Care has been taken to allow access on to the square from the sides flanked by these blocks. A sunken garden with seating has been provided and has been planned around an existing sycamore tree. In addition, 22 fast-growing trees have been planted in the square and its approaches. The square has been paved in 12-ft. panels of exposed aggregate separated by brick drainage channels.

Two sunken playgrounds have been provided, one for ball games and one for the use of toddlers.

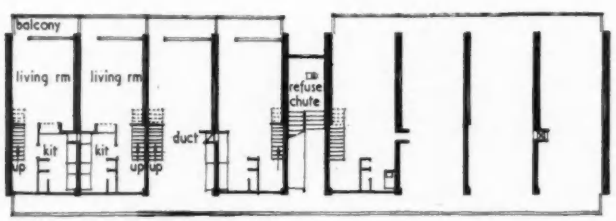
The structural systems employed are either framed or brick cross-wall, with 'stahlton' pre-stressed concrete floor units.

Blocks 33 and 34: in situ r.c. frames with pre-stressed floors. Block 38: in situ r.c. frame, with pre-stressed pre-cast r.c. T-beams and pre-stressed floors. Block 40: 9 in. brick crosswalls with pre-stressed flooring. Blocks 41, 42, 43: 9 in. brick crosswalls with first and second floors pre-stressed flooring, and the third floor in timber flooring. Roofs in each case are in situ reinforced concrete.

THE CHILDREN'S LIBRARY occupies two ground floor bays of block 38, which were originally intended for shops. The requirement was for a library housing

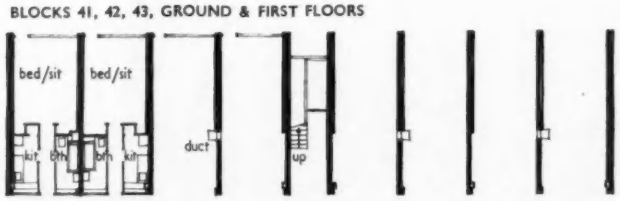


THIRD FLOOR

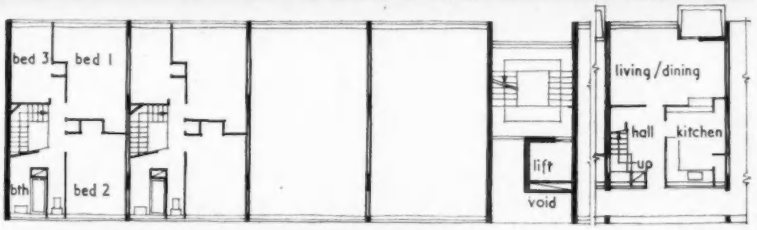


SECOND FLOOR, Scale: 1 in = 32 ft

BLOCKS 41, 42, 43, GROUND & FIRST FLOORS



Above, blocks 42 and 43, with block 38 in the background which forms the frontage to Lupus-street. Below, entrance to the children's library at the west end of block 38. Right, plans of block 38, 2nd and 4th floors, and 1st, 3rd and 5th floors, scale: 1 in. = 24 ft.

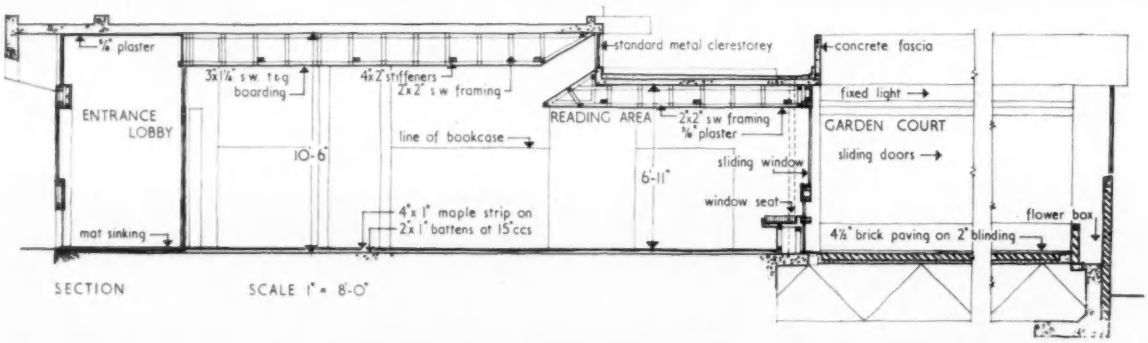


4,000 books and a reading room, to be used by children up to the age of 15 years during school hours and in the evenings.

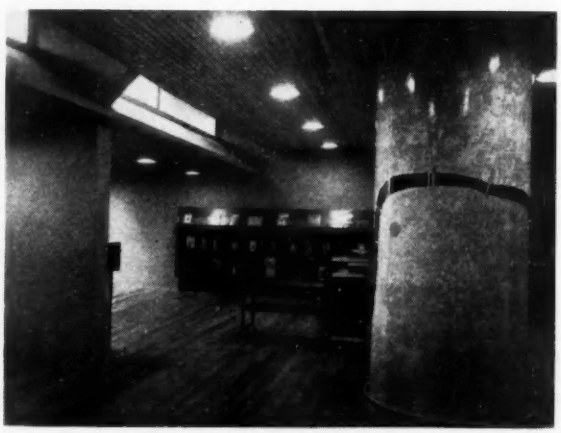
Design problems were essentially those of a conversion and addition, not of a new building. The aim has been to provide a children's library with a cheerful atmosphere, avoiding the character of an overpowering institution. The colouring, however, is generally restrained, as it was felt that the covers of the children's books were the best and most natural method of giving bright, stimulating colours.

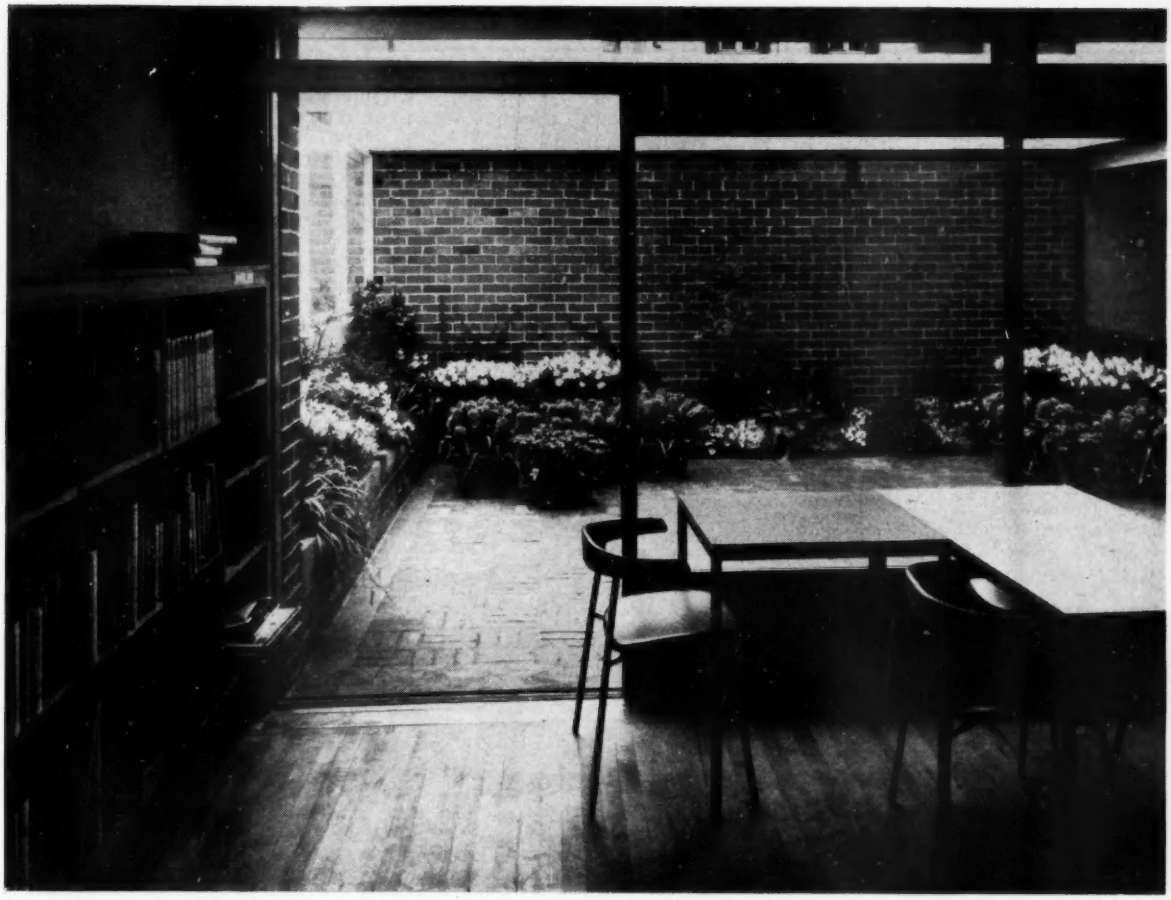
The size required for the library made it necessary to build over half the 'backyard' area. It has therefore been possible to build it round a 17 ft. square, partially enclosed, and sheltered garden. Sliding glazed doors open on to this garden, which can become an extension to the general reading and reference area.

The suspended ceilings are at different levels, dictated in part by the existing structure and by the wish to define and emphasise various spaces.



SECTION SCALE 1" = 8'-0"





Facing page: top, story-telling area, below, reading area, and cylindrical map feature of the locality. Above, paved garden opening off the story-telling area

INTERNAL FINISHES: flooring of 3 in. wide maple strip on battens bedded in the floor screed. Walls are finished with light-weight plaster and emulsion paint. Skirtings and bookcases are in West African hardwood. The free standing reinforced concrete column near the entrance is contained in a cylindrical casing of plaster on expanded metal on timber framing, and is 'wall-papered' with a 1/2500 monochrome ordnance survey map of London.

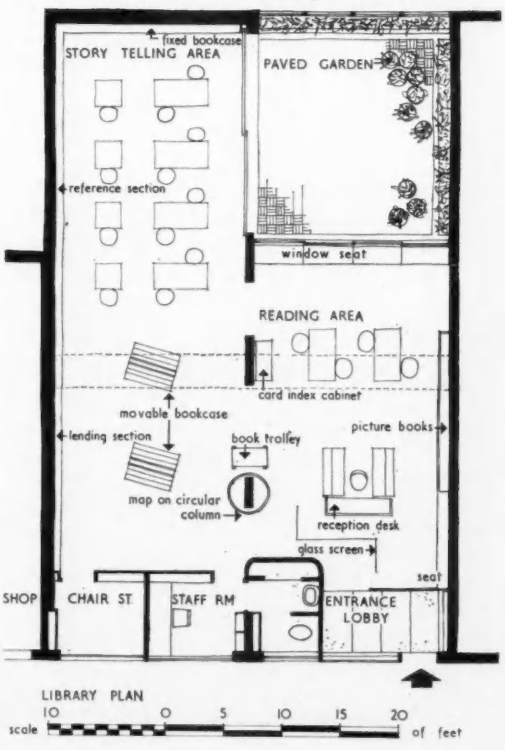
sub-contractors & suppliers (stage 3):

Library windows: P. G. Allday Ltd.; *patent glazing:* Barn Glass Works; *balcony screens and sundry ironwork:* A. Beanes & Co. Ltd.; *tanks:* Braithwaite & Co. (Engineers) Ltd.; *lifts:* Express Lift Co. Ltd.; *piling:* Cementation Ltd., Cement Glaze Ltd.; *balcony paving:* Excel Asphalt Co. Ltd.; *ceiling in public convenience:* Excludaire Acoustic Tile; *fish frier's flue:* Kitson's Insulation Ltd.; *railings and gates:* A. B. Mould & Construction Co. Ltd.; *roofing felt:* Prater Asphalt Co. Ltd.; *thermoplastic floor tiling:* Haskel Robertson Ltd.; *paving:* Val de Travers Asphalt Ltd.; *electrical:* Duncan Watson Engineers (Electrical Engineers) Ltd.; *heating and hot water installation:* Norris Warming Co.; *district heating main:* Sulzer Bros. (London) Ltd.

(children's library):

Joinery and fittings: D. Burkle & Son Ltd., Andrew A. Pegram Ltd., W. E. Tuck & Co. Ltd., D. B. Foulger & Son; *hardwood and metal sliding doors:* D. Burkle & Son Ltd.; *sliding windows:* P. G. Allday Ltd.; *map:* Edward Stanford Ltd.; *heating:* Norris Warming Co.; *electrical installation:* Duncan Watson Ltd.; *sanitary fittings:* Stitsons Sanitary Fittings Ltd.; *tables and armchairs:* Conran Contracts; *stacking chairs:* Pel Ltd.; *swivel armchair:* Hille of London Ltd.; *plastic lettering for bookcases:* Edmett & Co.

Churchill Gardens, Pimlico



Competition News

Government Office Building and Conference Centre ; Berkshire County Offices

AS BRIEFLY REPORTED in 'The Builder' of March 3 the Minister of Works invites applications from registered architects resident in the United Kingdom to submit designs in competition for an office and conference building proposed to be erected on a site at Broad Sanctuary, Westminster. The promoter has appointed Sir William Holford, MA, PRIBA, MTPI, Sir Leslie Martin, PhD, FRIBA, and Mr. Eric Bedford, CB, CVO, ARIBA, to act as assessors. Premiums of £3,000, £2,000 and £1,000 will be paid to the authors of designs placed first, second and third respectively. Designs should be submitted to the Secretary, Ministry of Works (AS8L), Lambeth Bridge House, London, SE1 (from whom conditions and site plans may be obtained on receipt of a returnable deposit of £2) by October 2. The final date for the receipt of questions is May 1.

The Minister of Works requires a building to provide offices and a Government conference centre. The offices will serve as permanent headquarters for the Treasury Solicitor's Department and for Parliamentary Counsel, and provide further office space, at present not allocated, for a further 200 staff. The conference centre will supplement the accommodation now available at Lancaster House and Marlborough House, but it is unlikely that ceremonial occasions will be associated with conferences held in the new building.

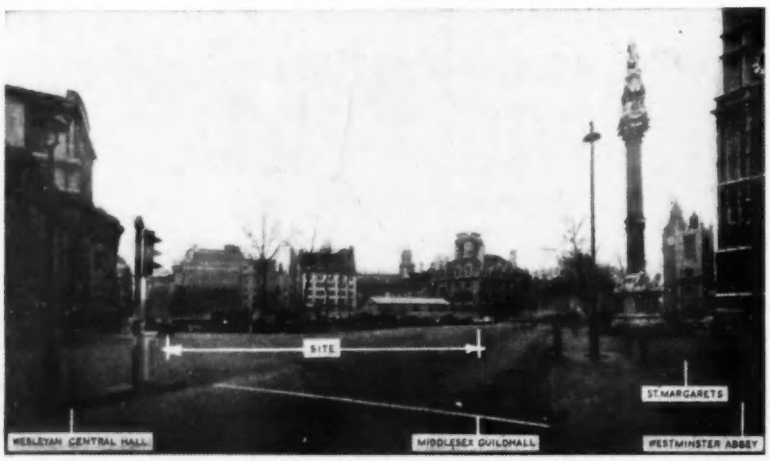
Site plans, sections and outline elevations supplied with the conditions show (a) the ground levels; (b) the position of services; and (c) the heights of surrounding buildings. Photographs of the site are also provided. To the south-east, and at a distance of about 150 ft., the site faces the west front of Westminster Abbey; to the east lies the Middlesex Guildhall; to the north, the site is bounded by the rear elevations and lighting wells of the row of buildings facing Great George-street, the Royal Institution of Chartered Surveyors, the Institution of Civil Engineers, and the Middlesex County Council offices. The Westminster Central Hall stands to the west. The northern half of the site was formerly occupied by the Stationery Office, and the southern part by the Westminster Hospital. Designs for a new Colonial Office were prepared in 1946 which caused much criticism. In 1952 the substructure of this building was erected but it was decided not to proceed with the building as designed.

It is open to competitors to decide upon the line of the south frontage of the new building, but it should not go beyond the southern extent of the old Stationery Office site. The promoter requires the space above the substructure at the front of the site to be used for underground car parking or to meet some other part of the requirements; a sense of openness must in any case be maintained in this area.

Access to the site by road is provided by Little Sanctuary, Broad Sanctuary and Storey's Gate, all three of which are at present open to traffic from both directions. Access points of entry and departure from the site could be at any point in Storey's Gate from opposite Matthew Parker-street to the rear boundary of the site, and in Little Sanctuary from a point on the line of Matthew Parker-street to the rear boundary. It should be noted that the general road structure in this area remains subject to review and the attention of competitors is drawn to two improvement lines affecting the site on the Broad Sanctuary and Storey's Gate frontages. These represent the current ideas of the road authorities.

The schedule of accommodation includes 110,000 sq. ft. of office space comprising: Treasury Solicitor's Department, 36,000 to 44,000 sq. ft.; Parliamentary Counsel, 11,000 to 12,700 sq. ft.; conference centre, 33,000 sq. ft.; welfare accommodation, 5,000 to 6,000 sq. ft.; and other office space, 20,000 sq. ft. The sum of £800,000 will be available to cover the cost of the building, the forecourt and car parking arrangements, but excluding furniture, etc. The existing reinforced concrete substructure is capable of taking the dead load of the new building without additional foundations.

Competition for government office, Broad Sanctuary, Westminster



Berkshire County Offices

BERKSHIRE COUNTY COUNCIL are inviting architects to submit designs in competition for county offices proposed to be erected at Reading. The promoters have appointed Mr. Frederick Gibberd, CBE, FRIBA, MTPI, to act as assessor. Premiums for designs placed first, second and third will be £3,000, £2,000 and £1,000 respectively, the second and third to be merged in the event of a larger number of prizes being awarded. Designs should be received by the Clerk of the County Council, Shire Hall, Reading (from whom conditions and a site plan may be obtained on receipt of a returnable deposit of 2 guineas), by October 31. The last date for questions is June 26.

The new buildings are to accommodate a council chamber and administrative offices on a site bounded on the north by Abbot's-walk, on the west by Abbey-street, on the east by the Abbey ruins, and on the south by Ridley's Mill. No exceptional foundations will be required since the site subsoil is normal. In addition to the existing basements, foundations, drains and services, the site is also covered to a great extent by the buildings of Reading Abbey which exist beneath the present surfaces. Competitors should ignore any problems which might arise by the existence of such known or unknown building work. Trial holes have not been made, but it may be assumed that the bearing capacity of the subsoil will be approximately 2 tons per sq. ft. from 3 ft. 6 in. below existing ground level down to 80 ft. below these levels.

It is expected that Abbey-street will be relieved of through traffic by a new relief road, but it will be retained as access to the adjoining buildings. The Abbey wall on the east of the site will be re-aligned. The Abbey gateway, which is not the property of the County Council, and a 55 ft. length of stone wall of the old abbey ruins will be retained.

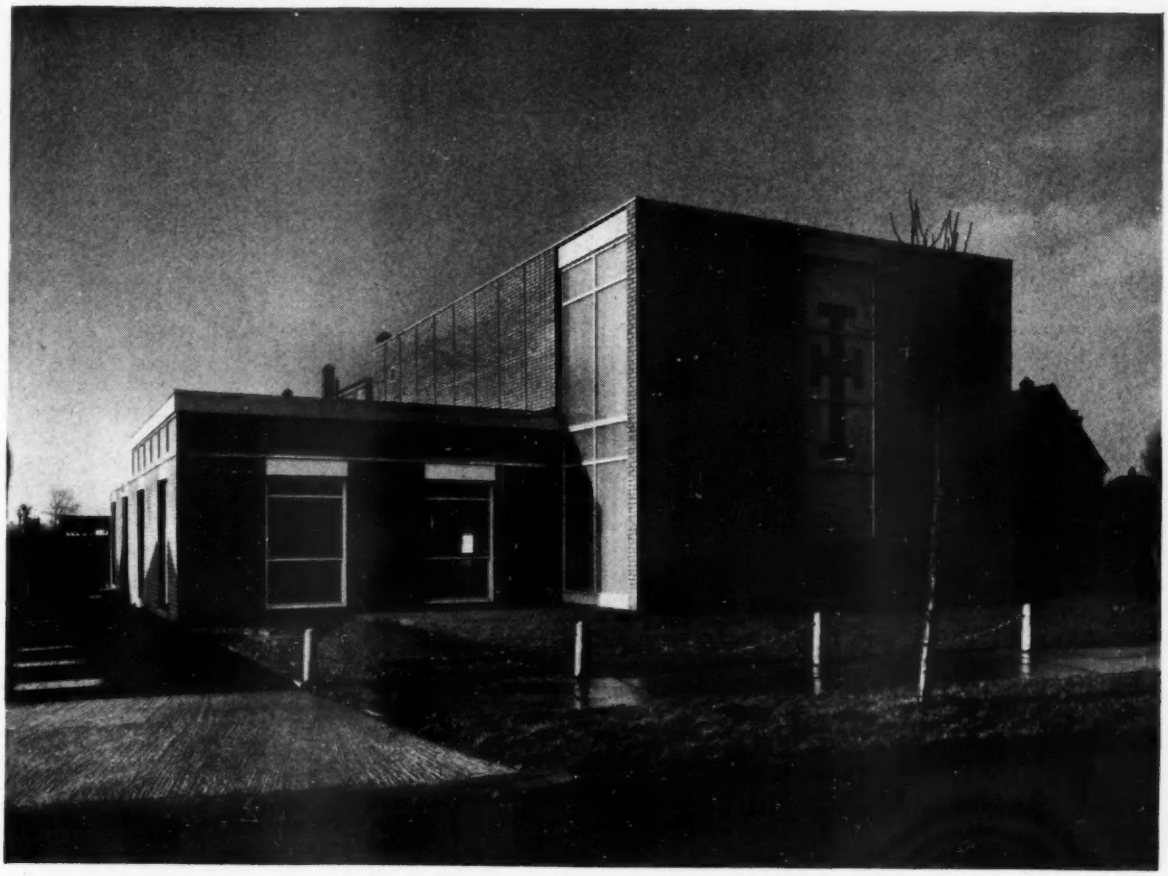
The schedule of accommodation includes 9,310 to 11,310 sq. ft. for the council chamber, committee rooms and ancillary units; 85,080 sq. ft. for the various administrative departments; and 11,350 sq. ft. for miscellaneous requirements, i.e., porter's lodge, stores, telephone exchange, etc. Car parking facilities are required for not less than 200 cars.

Consultant for Bognor Regis Building

BOGNOR REGIS (West Sussex) Urban District Council have approved the appointment of a consultant architect to be selected by the RIBA to advise on the schemes submitted for the comprehensive development of the area from Clarence-road to Waterloo-square.

St. Andrew's Church, Ruislip

BADER & MILLER, A/ARIBA, architects
JOHN DE BREMAEKER & PARTNERS, consulting engineers
R. & F. DAW LTD., general contractors



main church and church hall, east elevation

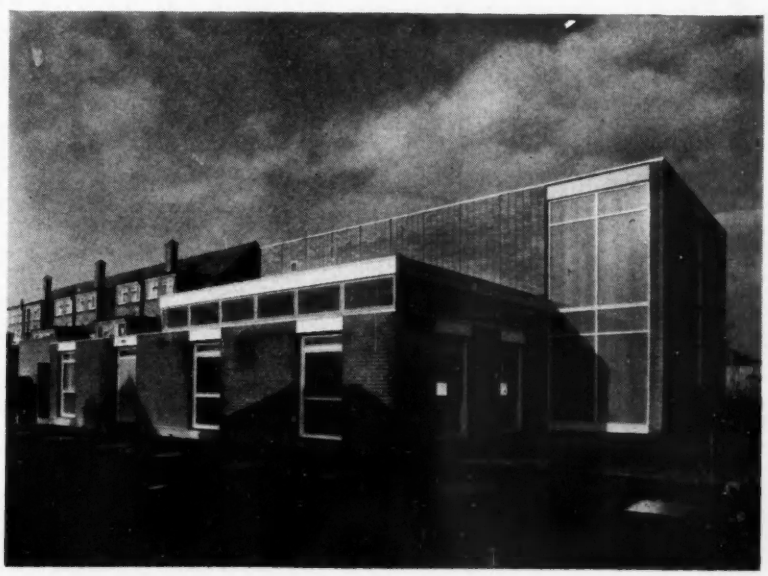
south elevation

ST. ANDREW'S LUTHERAN CHURCH, at Ruislip, Middlesex, was built for a congregation which had been attending services during the past few years in a prefabricated hall hired from the local council.

The clients' basic requirements were for a church to seat 120, with provision for seating larger congregations on special occasions. The design of the church was required to express a contemporary approach to building and the maximum cost was limited to £16,000.

In view of the target figure the architects collaborated closely with the quantity surveyors, Leslie Keats and Partners, through all stages of the design on the basis of a cost plan. This ensured, from a cost viewpoint, that the design was thoroughly realistic. Tendering was, in fact, keen and a contract price of £14,280 enabled several items to be included which had previously been considered too expensive.

The site is a corner site which, at one time, was zoned for the continuation of the adjoining parade of shops and flats.



church interior towards foyer and choir room over. The ceiling is exposed troughed timber decking. Below, ground floor, scale: 1 in. = 16 ft.

The main planning problem of providing for larger congregations when needed, was solved by installing glazed pivoted screens at the rear of the church so that the anteroom or foyer can be used for overflow accommodation. Three classrooms on the opposite side of the foyer, which have folding partitions and curtain screens, can also be used for overflow accommodation. A gallery over the foyer houses the organ, choir, and a 'crying room' for mothers with small children.

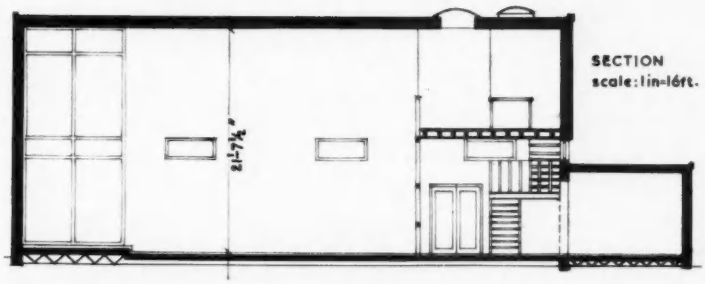
Construction is of calculated brickwork on ground beams and piles, in 9 in. and 13½ in. work to the church and 11 in. cavity walling elsewhere. Roofs are of troughed timber decking, exposed on underside. Externally, the walls are clad at high level with 4½ in. brick panels with straight vertical joints. Internally, walls are fair faced or colour-washed. Heating is by infra-red heaters, with underfloor heating to the chancel and part of the hall. Side windows to the chancel have acid etched glazing, with Western red cedar louvres internally. The Altar window is of 'plyglass' panels bearing a decorative cross.

Total area: 3,923 sq. ft.; final contract price, including fittings and external works: £15,250; cost per sq. ft.: 77s. 9d.; contract period: November, 1959, September 10, 1960.

sub-contractors & suppliers:

Piling: Cementation Ltd.; *roofing:* H. Newsum Sons & Co. Ltd.; *electrical:* Kenton Electrical Installations Ltd.; *flooring:* The Philip Flooring Co. Ltd.; *metalwork to pulpit & lectern:* Clayton & Bamber Ltd.; *decorative panels to pulpit & lectern:* Formica Ltd.

Above, view showing relation of church with adjacent shopping parade with flats over. Top right, foyer with curtain screening to class-rooms. Below, church interior towards chancel. Brickwork is fair faced, and side windows have full height timber louvres directing light on to the altar



St. Andrew's Church, Ruislip

Letters to the Editor

Plastic Roof Coverings for Buildings; Michele Sanmicheli at Verona; Not-so-fixed Price Tendering

SIR,—My attention has been drawn to a circular letter issued by a local authority (a large city in the West Riding of Yorkshire), setting out '"agreed rules" to regulate the use of translucent and other types of plastic and non-traditional roof coverings for buildings subject to the control of the Building By-laws.'

The 'rules' have been formulated for three cases. The wording for Case I is:

> 'Any materials satisfying the tests set out in the British Standard for designations A.A., A.B. and B.A. will be deemed to satisfy By-law 49 (Roof Coverings) and in consequence will enjoy the same privileges as those materials listed in this By-law.'

It appears from this wording that for Case I, the whole or any part of the roof may be covered with plastic material provided that it is designated according to BS476, Part III.

Case II is where the requirement for the fire resistance of the walls has been relaxed. There are three sub-classes; (a) where the fire resistance of walls is 1 hour, plastic material may evidently be used in the roof without any restriction provided that the material is designated B.A. As alternatives, (b) where the fire resistance of the walls is ½ hour, or (c) where the walls are required to be externally incombustible, the use of plastic coverings is allowed but with restrictions as to total area and disposition.

Case III appertains to translucent roof lights to flat roofs on other buildings.

The designations A.A., A.B. and B.A. are, of course, convenient symbols of performance of materials subject to test under BS476, Part III—External Fire Exposure Tests. As explained in the foreword to Part III, the tests are designed to give information concerning the hazard that exists of fires spreading to the roof of a building from a nearby fire outside the building itself *and are not concerned with the behaviour of a roof when subject to the effects of fire on its underside.*

I am wondering, therefore, what is the reasoning of the Authority in laying down that designations of BS476, Part III (applicable only to External Fire Exposure) shall be deemed to satisfy that part of By-law 49 requiring adequate protection against the spread of fire from a burning building to adjoining buildings.

It appears to me that, taking average cases, the effects of radiation and flame on the underside of the roof covering of a burning building must far exceed the effects of radiation and flame on the upper surfaces of the same roof covering from a fire in a nearby building—and if this is so, the question arises why the Authority approves the use of plastic materials without restriction for Cases I and IIa. Fire load does not seem to be 'tied in' to any great extent.

Perhaps some person or body more competent than I would be good enough to interpret and evaluate the 'agreed rules' for me.

NORMAN JACKSON,
Hazledene, Northfields, Dewsbury.

Michele Sanmicheli at Verona

SIR,—The fascinating exhibition now open at the RIBA on the works of this early sixteenth-century architect will stimulate in many of us memories of the lovely city of Verona where most of his buildings were erected; the accompanying plan of the city showing their positions and dates may therefore be of interest. From the subjoined chronological list it will be seen that his practice (in this place alone) extended over nearly 40 years, that his earliest work is the Porta S. Giorgio across the river, his latest to be finished the well-known Porta Palio, and that these conspicuous gateways (apart from the former) came rather late, i.e., after most of the renowned palaces, which were built in one decade. The surviving bastions came still later; most of them were rebuilt early in the nineteenth century.

Sanmicheli at Verona

'I have been asked to criticise the RIBA prizes!'

1525 Porta S. Giorgio.
c.1530 Palazzo Pompei (again east of the river).
1530 T, ? -35 E Pal. Bevilacqua (i.e., presumably, 'drink-water').
1530-31 Pal. del Tribunale, formerly del Capitano: portal.
c.1531 E - 1537 T Pal. Canossa.
1534 Duomo: tornacoro (choir screen).
1540 Porta Nuova (a familiar landmark as one drives from the station named after it).
1540-42 E, 1544 T Porta S. Zeno (not certainly attributed).
1542- T or 1546-E, -1557 T Porta Palio.
1547— S. Maria in Organo (again across the river), façade (part).
1548 Bastione Spagna (not in the exhibition).
1551 Bastione San Francesco (not in the exhibition).
1555 Pal. Guastaverza, now Malfatti, by the Liston (the promenade on the north-west side of the Bra).
1556 S. Bernardino: Cappella Pellegrini.
—1557: see 1542-57, above.
16th cent. (unspecified) Duomo: campanile (except top and base) no date: all other buildings.

These are all in the exhibition, except where noted. (E = exhibition catalogue; T = Touring Club Italiano, *Guida d'Italia* series, *Veneto* volume. 1954: these two authoritative sources, in the items so marked, do not tally.) It is significant that these buildings, though contemporary with the reigns, in this country, of Henry VIII, Edward VI, and Mary, are stylistically parallel rather to the work of a century or more later.

H. V. MOLESWORTH ROBERTS
Wallington, Surrey.

The Design of County Hall

SIR,—Both Mr. Julian Leathart ('The Builder' of March 3) and Mr. W. Fraser Granger (February 17) are barking up the wrong tree. No one has stated that the late F. R. Hiorns 'assisted' Ralph Knott in the design of the first part of County Hall. What was stated was that W. E. Riley—then Chief Architect to the London County Council — made drastic changes in Knott's original design and that Riley's chief assistant was Hiorns—who was probably responsible for them. Mr. Leathart's statement that all that W. E. Riley did was to hold a watching brief as the Council's architect and to 'rubber-stamp' the drawings prepared by Knott's staff is quite incorrect.

Riley had a much stronger personality than Knott, and was more experienced in the practice of building—hence the drastic changes he brought about in the original design.

May I add that many architects prefer the design of the later blocks of County Hall to that part won in competition.

SIDNEY H. LOWETH [FSA, FRIBA],
Folkestone, Kent.

Not-so-Fixed Price Tendering

SIR,—The decision of Kent County Council—reported in 'The Builder' on March 3—to include a variation-of-price clause in their future building contracts is regrettable—albeit understandable—and it is to be hoped that there will be no general tendency for others to jump through the same gap-in-the-hedge to take the line of least resistance in the present unsettled conditions in the industry.

How refreshing, therefore, to see in the same edition of your newspaper that Mr. Peter Trench is reported as stating that the NFBTE continues to back the principle of fixed-price tendering in the best interests of the industry as well as of the national economy as a whole. But, as he implies, the writing is on the wall and it would be wise for all concerned to study it—in the form of the latest Note by the NJCC concerning the basic principles of tendering on a fixed-price basis. The only alternative, it seems, is that sooner or later builders will refuse to tender unless a variation-of-price clause is included in the conditions of the potential contract.

There may be other expedients but, as anyone considering the problem objectively must agree, there is no other satisfactory alternative to the principles defined by the NJCC. The problem is how to improve the current situation, and I would suggest that from all points of view this can be achieved by complying—at once—with the NJCC Notes. This could have the effect of putting back the date-programme for certain projects by, say, six months but the present is the ideal time for doing so, as by then the general economic situation may well have clarified itself. What is more, it would be possible for takers-off and builder's estimators to assist with the back-log of outstanding final accounts during the lull in their more usual activities.

One further point. If, after all, the situation continues to be such that builders do insist that a variation-of-price clause is reinstated in building contracts, *must* it be the (nearly) defunct and unlamented Clause 25A? Perish the thought of again having to prepare or check the dreary mass of data which it requires! We could, I believe, achieve a near-enough result by applying the appropriate Board of Trade price indices to the contract sum as a whole—or to agreed proportions thereof representing, broadly, the labour and material elements respectively.

ARTHUR T. GINNINGS [FIQS],
20 Alderdale-drive, High-lane,
Cheshire.

The Architecture of Speech

SIR,—'Acanthus' need have no misgivings. The dignified gentleman he portrayed is far too well dressed ever to be taken for me.

G. MAXWELL ALWYN [FRIBA],
26 West-street, Farnham, Surrey.

Chartered Surveyors' Dinner

Agriculture and the Law

AGRICULTURE and the law formed the principal themes of this year's annual dinner of the Royal Institution of Chartered Surveyors, which was held at Grosvenor House, W1, on Tuesday evening. The themes were inspired by the great interest of the President, Mr. J. D. Trustram Eve, in the land, and the fact that the Royal Institution was favoured in having the Lord Chief Justice, Lord Parker of Waddington, to propose the toast of the RICS.

The subject of agriculture was humourously introduced by MR. F. J. H. BRACKETT, chairman of the General Practice Committee, who proposed the toast of the guests. Mr. Brackett, who used classical analogies, said he was not a classical scholar, but he found the Penguin translations very good!

The BISHOP OF EXETER, who responded in an equally witty speech, said that the word 'bishop' and the word 'surveyor' both had the same original meaning—one who looks over something.

LORD PARKER, proposing the toast of the RICS, said he thought that lawyers and surveyors both had much in common and made an ideal combination, and working as they did together in so many ways they had a good opportunity to get to know each other. What finer tribunal could be found, he asked, than the Lands Tribunal?

Looking ahead, Lord Parker saw danger to both their professions in the long training, with little or no remuneration, required by lawyers and surveyors. Many young men today might be frightened by this and go into industry for more money. Furthermore, once trained, they might still be lost to industry. These were dangers which they all should watch.

THE PRESIDENT, in his response, said he thought that the only common thing that ran through all the complex activities of the surveying profession was the law. The RICS had a large number of lawyers as associate members and he thought that this was a great advantage to them. Referring to the Royal Institution's new examinations, he said he hoped that they would be both lighter and more sensible, by concentrating on principles rather than on facts.

Among the guests expected were: Cllr. R. L. Everest (Mayor of Westminster), Lord Parker of Waddington (Lord Chief Justice), Earl Waldegrave (Parl. Sec., Min. of AF&F), Earl of Radnor, Bishop of Exeter, Lord Cromwell, Lord Hylton, Lord Astor of Hever, Mr. Justice Widgery, Sir Derek Walker-Smith, Sir Toby Low, Sir Charles Russell, Sir Charles Norton, Geoffrey Lawrence, QC, W. M. F. Vane, MP (Parl. Sec., Min. of AF&F), Denys T. Hicks, S. John Pears, H. E. G. Read, W. Franklin Beavan, Lt.-Col. R. B. Verdin, Harold Woolley, Frank Russon, H. A. P. Fisher, QC, Canon M. S. Stancliffe, Robert A. Moore, Rowland Nicholas, E. C. Dee, Col. S. C. Rigby-Dale, Sir Alexander Killick.

Sir Hugh Casson, Sir Frederic Osborn, F. L. Wills, Sir Norman Kipping, J. Harold Thompson, Mrs. Muriel Forbes, Sir John Winnifrith, Sir Edward Muir, Dame Evelyn Sharp, Dame Mary Smieton, Sir William Fitzgerald, Sir Alexander Johnston, W. G. Agnew, Sir Austin Strutt, Sir Robert Fraser, Sir William Hart, Kenneth Goodacre, Dr. R. Jardine Brown, Sir Thomas Lund, A. S. MacIver, W. H. Clifford, R. S. Borner, Francis F. Taylor, J. K. Knowles, J. McDermid, P. R. Rathbone, H. N. Hurst, K. E. B. Glenny, Prof. F. Sewell Bray, Sam Jones, D. Barrett.

News of the Week

MoW as Competition Promoters

THE NEWS (given in our last issue) that the Ministry of Works is to organise a competition for designs for new Government offices on part of the Broad Sanctuary site, Westminster, will be generally welcomed by architects. Not since 1913 has the Ministry selected the architect for an important building in this way; on that occasion it was the design for the Board of Trade offices in Whitehall-gardens, won in February, 1915, by Mr. E. Vincent Harris, RA, FRIBA.

That competition must hold the all-time record for the time lag between assessment and the erection of the buiding. The great war prevented a start being made immediately after the award, and when peace came a long wrangle ensued consequent upon the Treasury's wish to scrap the design and start again. 'The Builder' took the lead in a campaign to retain Mr. Harris as architect, and this was in fact done. Mr. Harris revised his designs, but before building could begin, the 1939-45 war came and once more the scheme went into cold storage. At the end of the war, history attempted to repeat itself, but in the end justice prevailed and Mr. Harris's design was carried out under the supervision of the Ministry of Works. From start to finish, over 40 years elapsed. We shall hope that this new competition (on the initiation of which the Minister is to be congratulated) will be more fortunate.

Incidentally, the 1913 competition was a limited one, in which the ten firms chosen were each paid £300 for their trouble. The current contest carries premiums of £3,000 (to be merged in the fee), £1,500 and £1,000 for the designs placed first, second and third.

The Coal Exchange

WHAT TIME the coal industry is doing its best to commit suicide, a band of enthusiasts has formed itself into a society with the intention of saving Bunning's Coal Exchange in Lower Thames-street from demolition. It seems that the traffic needs of the area demand that either the Coal Exchange or the rear façade of the Custom House must go; if this be the choice, the feeling of the meeting, as expressed by Sir Mortimer Wheeler, was that it should be the Custon House, for that building, by Smirke, represented the end of an old architecture and the Coal Exchange the beginning of a new. It is, of course, a cast-iron building, the first (according to Mr. Betjeman) in the world.

The meeting was prodigal, and practical, in suggestions and a committee consisting of Mr. Brian Batsford, MP, Mr. Betjeman, Lord Mottistone, Sir Albert Richardson, Mr. Peter Chamberlin and Mr. C. S. Chettoe was set up to consider the various proposals and to approach the City Corporation and Ministers concerned. Our money is on them!

Architecture Club Supper

A SUPPER is to be held by the Architecture Club on March 16 at Simpson's-in-the-Strand. It will be followed by a debate on the proposition 'that the primary duty of an architect is to satisfy his client' in which the opening speakers will be Mr. David Woodbine Parish and Mr. Jack Pritchard. Tickets, excluding wines, price 30s. each, from the club secretary, at 26 Store-street, London, WC1.

Appointment

HULL CITY COUNCIL on March 2 appointed Mr. D. C. H. Jenkins, FRIBA (47), senior architect (head of general division) London County Council, as city architect of Hull in succession to Mr. Andrew Rankine, OBE, ARIBA.

RIBA Golfing Society

THE EIGHTH ANNUAL DINNER of the Royal Institute of British Architects' Golfing Society will be held at the Milestone Hotel, Kensington-court, London, W8, on March 24. Applications, which should be returned with remittances (tickets are 2 guineas each) by March 12, may be obtained from Mr. S. H. Statham, FRIBA, Messrs. Sydney Clough, Son and Partners, Devonshire-close, 39 Devonshire-street, London, W1.

'Building Matters'

REPAIRING and maintaining our historic buildings calls for a high level of craft skill—often skills not in general use today. Charles Crichton and Edward Mills will be joined by David Nye—an architect specialising in the repair of ancient buildings—in a discussion on this subject in 'Building Matters' on Tuesday, March 14 at 7.30 p.m. (Network Three).

Professional Announcements

MESSRS. TOZER & PARTNER, quantity surveyors, have opened a branch office at 47 Grove-street, Wilmslow, Cheshire. Mr. J. D. George, ARICS, is in charge, and will be pleased to receive trade literature.

MESSRS. BRYDEN & WOODFORD, chartered quantity surveyors, have removed their London office to 4 Upper Belgrave-street, Westminster, SW1. Tel.: Belgravia 6171.

MESSRS. J. B. MARKS & PARTNERS, chartered quantity surveyors, have moved to 52 High-street, Guildford, Surrey.

A Hundred Years Ago

From The Builder of March 9, 1861

TOWN SURVEYOR WANTED.—The improvement Commissioners at St. Ives, Huntingdonshire, as their hand-bill testifies, want a surveyor of the paving, drainage, and other works authorised under the Improvement Act, and they offer the annual salary of £15. The surveyor is expected to be a first-class man, worthy of the approval of the Home Secretary! From the absence of a proper system of sewers and other sanitary arrangements, wells and cesspools are in disgusting proximity, the mortality of the place is above the average, and the unsavoury odours wafted about by every breeze prove that the duties of the office will be onerous if faithfully performed. It is essential that the surveyor must reside at St. Ives: this of itself is worth some compensation; and for the skill necessary for the efficient execution of his official functions, he is insulted by being offered £15 a year, or 11¼d. per day; barely the cost of keeping a pauper in a workhouse.

Coming Events

FRIDAY, MARCH 10

BUILDING CENTRE.—Exhibition of materials and finishes in modern hospital building, 26 Store-st., WC1. 9.30 a.m. to 5 p.m. Sats.: 1 p.m. (until April 8).

INSTITUTION OF STRUCTURAL ENGINEERS (SOUTHERN BRANCH).—'Timber Structures,' by Mr. H. Tottenham. Engineering Lecture Theatre, Southampton University. 6.30 p.m.

GUILD OF BUILDING.—Annual dinner and prize presentation. The Guildhall, Kingston-upon-Thames.

MONDAY, MARCH 13

BRIXTON SCHOOL OF BUILDING.—Headmasters' meeting to discuss LCC pamphlet on 'Building Studies in Secondary Schools.' Ferndale-rd., London, SW4. 2.30 p.m.

PUBLISHERS ASSOCIATION.—'Books for Industry' exhibition. Engineering Centre, Birmingham 3 p.m. (until March 16—10 a.m. to 9 p.m.)

TUESDAY, MARCH 14

INSTITUTE OF QUANTITY SURVEYORS.—Talk on: 'Brasilia.' 98 Gloucester-pl., W1. 7.45 p.m.

INSTITUTE OF BUILDERS DISCUSSION CLUB (BRIGHTON AND DISTRICT CENTRE).—Building Brains Trust. Hotel Metropole, Brighton. 7.15 p.m.

BBC (NETWORK THREE).—'Building Matters.' 7.30 p.m.

IMPORTED FIBRE BUILDING BOARD FEDERATION—Annual dinner. Grosvenor House, Park-la., W1. 7.45 p.m.

WEDNESDAY, MARCH 15

REINFORCED CONCRETE ASSOCIATION.—Symposium on: 'Large Diameter Bored Piles.' 11 Upper Belgrave-st., SW1. 5.30 p.m.

ARCHITECTURAL ASSOCIATION.—'The Work of the Services Consultant and his Association with the Architect,' by Mr. T. Smith. 34-36 Bedford-sq., WC1. 6.15 p.m.

INSTITUTION OF STRUCTURAL ENGINEERS (YORKSHIRE BRANCH).—'Water Excluding Structures,' by Mr. L. R. Creasy and Mr. L. Scott White. Metropole Hotel, King-st., Leeds. 6.30 p.m.

REGIONAL COUNCIL OF FURTHER EDUCATION FOR THE SOUTH WEST & EXETER EC.—Short course on: 'Modern Methods of Central Heating for Domestic and Small Premises.' Exeter Technical College, Hele-rd., Exeter (until March 22).

THURSDAY, MARCH 16

COMBUSTION ENGINEERING ASSOCIATION (WESTERN REGION).—'Instrumentation of the Boiler House,' by Mr. J. D. Rutherford. Seabank Hotel, Porthcawl, Glam. 10 a.m.

JOINT ADVISORY COMMITTEE ON TRAINING IN THE BUILDING INDUSTRY (JUNIOR LIAISON COMMITTEE).—'Building in North America,' by Mr. W. Tompkins. IoB, 48 Bedford-sq., WC1. 6.30 p.m.

THE ARCHITECTURE CLUB.—Supper and debate on proposition 'That the Primary Duty of an Architect is to Satisfy his Client.' Simpson's-in-the-Strand, London, WC2. 7 p.m.

FRIDAY, MARCH 17

TOWN & COUNTRY PLANNING ASSN.—Regional conference: 'The London Region and the Future of South-East England.' Conference Hall, County Hall, SE1. 10.45 a.m.

INSTITUTE OF QUANTITY SURVEYORS (NORTH WEST BRANCH).—'The Standard Form of Building Contract,' by Mr. H. M. Stafford. Imperial Hotel, Blackpool. 6.45 p.m.

SOUTHERN REGIONAL COUNCIL FOR FURTHER EDUCATION AND PORTSMOUTH EA.—Course for teachers of painting and decorating. Portsmouth College of Art (until March 19).

More Everyday Things

BY ARTHUR W. KENYON, CBE, FRIBA

32. Noise

'WHISTLING workmen can lose firms a hospital job.' So says the headline in a London evening newspaper. I am afraid I have been a whistling workman all my life, in spite of all the people who from time to time have made it plain that they would prefer the work without the whistle. I suppose this really is an irksome noise to many people and not one that you can dispense with by the turn of a knob, as you can the demented singers on radio and television.

The noise which caused the headline was the whistling of workmen outside a hospital, and the committee were complaining that many workmen lacked consideration for patients ill in bed. I can remember the time when straw was put down in the road in front of a house where someone lay seriously ill to deaden the sound of traffic. Can you imagine such a thing happening today? Yet there is little doubt that road surfaces could be made to deaden traffic noises instead of accentuating them. If only our research scientists would turn their attention to lessening the sound effects of building operations instead of thinking up louder and more ear-splitting mechanism, I believe there would be a general lessening of nervous tensions in the world.

I cannot at the moment think of a

single instance where science has not produced noisier building operations. Automatic hammers, pneumatic drills, steel scaffolding, electric saws, concrete mixers, all-metal lorries—all contribute to the cacophony.

We undoubtedly live in an age of noise. The old London street criers would make little impression on our modern traffic-ridden ears, although we are told that in days gone by their combined cries produced a kind of bedlam in the streets. Even the newspaper vendors now seem to have accepted their defeat.

The noise of building is a subject requiring serious attention from someone. I am quite sure a great deal could be done to lessen it, but I should be sorry if we had to start on the happy workman blithely whistling while he works. Building is heavy work and there is still much lifting and carrying to be done by hand. The natural tendency is to drop a heavy load with a resounding thud rather than to place it on the ground. I always wonder why the scaffolders have to drop those clanging poles off their lorry with all the resonance that steel can produce. But perhaps this would be easier to understand if I were at the handling end of the operation.

I sincerely hope that no sick people anywhere, in hospital or out, will suffer from our building noises. I hope with equal sincerity their suffering may be eased without having to resort to dismissing all our whistlers.

PS. I have just heard the good news that the LCC are to experiment with a silencer on the pneumatic drill.

Town Planning Institute

Ministries of Housing and Transport to Set up Joint Working Parties

SPEAKING at the annual dinner of the Town Planning Institute, DAME EVELYN SHARP, Permanent Secretary, Ministry of Housing and Local Government, said that her Ministry, and the Ministry of Transport, were aiming to achieve greater co-operation between them in planning and traffic problems than had obtained hitherto, and the two Ministries were in fact now in process of establishing joint working parties to study the joint problems with which they were faced. The dinner was held at the Trocadero Restaurant, W1, on March 1, with the President, Mr. Rowland Nicholas, in the chair.

Dame Evelyn, who was responding to the toast of the guests, referred to the 'fantastically complex' problems facing Mr. Marples, the Minister of Transport, of which she was reminded every time she was 'whizzed round Hyde Park Corner,' after which it was a relief to get back to the comparatively quiet waters of the Ministry of Housing and Local Government.

Continuing, Dame Evelyn said that planning had reached something of a crisis today, faced as it was by the 'incredibly complex and enormously challenging' problems of the motor age. All this pointed to the increased importance of an adequate supply of competent and qualified people coming into the planning profession. There were still, she said, a number of county boroughs which did not employ a chief planning officer, which was in part a reflection of the difficulty of finding a sufficient supply of people able to cope with the enormous problems of urban renewal.

Earlier, the PRESIDENT, who proposed the toast of Her Majesty's Ministers, said that it was not surprising after two world wars, when rebuilding had been at a standstill, if the present era was marked by an enormous amount of urban renewal. In all this he would have liked to make the point to Mr. Marples (who was prevented from attending the dinner by pressure of Parliamentary duties), that he hoped that we would not lose this opportunity to provide the nation with a proper urban highway system.

Speaking of Manchester, Mr. Nicholas said that the city provided interesting possibilities of ultimately providing an upper level pedestrian circulatory system throughout the whole of the central area. To make this possible they had to ensure that as rebuilding progressed allowance was made for this purpose in individual buildings, so that eventually the various parts of the system could be connected together. Such a development, he suggested, would make possible a more intensive development of the central sites, which would in turn make more land available for other purposes.

SIR KEITH JOSEPH, Parliamentary Secretary, Ministry of Housing and Local Government, who represented the Government on behalf of Mr. Marples, referred to the great responsibilities of the planning profession today, for there had never been a time when there was more development of one kind or another taking place. After citing a number of examples where statutory control of development applied, from National Parks to orders affecting the preservation of buildings of historic or architectural interest, Sir Keith claimed that it could not be said in this country that planners lacked an adequate legislative framework for proper planned development.

The toast of the guests was wittily proposed by MR. ERIC BELLINGHAM, OBE, LLB.

Obituary

Mrs. Joan Hanna

HER MANY FRIENDS will have learned with distress of the death, which took place as a result of a motor accident near Worksop on February 28, of Mrs. Joan Coulton Hanna, wife of Mr. M. C. Hanna, only daughter of Sir Jonah Walker-Smith, former Director of the National Federation of Building Trades Employers, and Lady Walker-Smith.

As Joan Walker-Smith, she was editor for some years before the war of 'The National Builder,' and was much liked by her colleagues of the technical Press. She retired from this post on her marriage to Major J. St. L. Thornton; after his death on active service in the war she married Mr. M. C. Hanna and lived at Oldcotes, Notts. To her husband, children and step-children and to her parents, sincere sympathy is extended.

Architects' and Engineers' Joint Meeting

Mr. Howard Lobb and Mr. W. S. Atkins discuss the 'Housing of Large-Scale Plant'

A joint meeting of members of the Institution of Civil Engineers and the Royal Institute of British Architects was held at 66 Portland-place, W1, on March 7, with Sir William Holford, PRIBA, in the chair, when papers on 'The Housing of Large-Scale Plant' were read by Mr. Howard Lobb, CBE, FRIBA, and by Mr. William S. Atkins, BSc (Eng), MICE. A discussion followed. Extracts from the two papers are now given:

Mr. Lobb's Paper

THE UNITED KINGDOM is supporting a population of approximately 50 million, in an island naturally capable of supporting half that number, and is seeking to achieve a continuous improvement in material standards of living which require maximum export of products from this country to pay for the food and the raw materials which have to be imported. This cannot be done without growing industrialisation, so that areas which hitherto have been exclusively rural in character have to be used for large-scale industrial plants. The housing of large-scale plants such as thermal and nuclear power stations, steel-making plants, colliery buildings, and the like, must be considered in relation to town and land planning in its widest sense, embracing such matters as circulation of traffic and materials and services to and from the plants, as well as extensive community groups where employees are numerous.

Quite naturally these developments tend to arouse considerable opposition from private individuals, amenity societies, and similar organisations. The Industrial Revolution and the growth and the spread of the great towns have denied to a large proportion of the population this contact with unspoiled nature. Deep down in men's minds this loss may be seriously felt. Yearly, and with each growth of these large-scale plants, this escape becomes more difficult, so that the average man becomes increasingly suspicious of the steady encroachments on the remaining areas of open land.

Functional Tradition

The earlier buildings of the Industrial Revolution have been referred to as the start of the functional tradition. There is no doubt that, in their massive stone and brick, with their internal cast-iron columns, although many have long been obsolete, they still stand as fine examples of architecture in Yorkshire, Lancashire, and the vales of the West Country, conforming well with the landscape. These buildings were mainly the work of the architect-engineer. You will note that I refer to the designer by a combined title and if, before this audience, it should be regarded as heresy to refer to a man like Telford as being in part an architect, I suggest that Christopher Wren—as the greatest constructor of his age—might equally be denoted an engineer-architect. It was only as the nineteenth century progressed that architects, turning their backs on science, and obsessed with styles, allowed this field of work to become largely the prerogative of men calling themselves engineers. Modern architectural education has long abandoned this restricted view of the architect's function. What is much more to the point, however, than a fruitless argument about terminology is that great construction works are now so complex that specialisation has become inevitable.

Today, these huge and complex buildings are essentially designed on a basis of co-operation by teams of specialists. Indeed, they must be if they are to be efficient. Some of these call themselves engineers, often with a prefix such as structural, mechanical, production, or heating. There are also types of surveyor, such as quantity, land, or mining. The architect and landscape architect are also specialists in particular fields. My chief interest is naturally the contribution which the architect can make to this kind of work, which admittedly is predominantly engineering of various kinds. He must, of course, have the right approach to such work, but so must everyone in the design team. The approach is everything. These structures are, in essence, a cover over a production process. In almost every case the envelope costs far less than the plant it encloses, and it is obvious that the manufacturer's first preoccupation is with his plant, its flow of production, the storage of raw materials and manufactured goods, the method of control and supervision, and the precise layout of services such as electricity, gas, steam, and compressed air, as well as the comfort, convenience, and safety of the employees. Appearance and aesthetics hardly impress him at all, although he likes to have buildings which are seemingly businesslike and which enhance the prestige of his firm.

But the general public, who after all are in a way ultimately the clients, will pay great attention to the appearance of the building and to the way it sits in the landscape. The architect owes some duty to them, as indeed does the whole team. But the architect who places purely aesthetic considerations before those of function is doing a great disservice to the team. So also is any member of the team who adopts a similar 'prima donna' attitude in over-emphasising his contribution to the project. It should be remembered, however, that the architect is the only member who throughout has the ultimate appearance in mind.

To design an industrial building one must first understand thoroughly the whole process for which the building is intended. All manufacturing processes begin with an intake of raw materials or partly finished materials, or both, delivered by road, rail or water. These materials have to be handled and stored with the minimum of expenditure in man-hours. It was recently reported that in one of the huge car factories, there is only 1½ hours storage of a vital component in the main assembly plant. Instead of storing them, necessary products are delivered from sub-contractors to the appropriate part of the assembly line at fixed times. Each operation, such as the handling and storing of components, and each mechanical aid, such as the crane, the conveyor, or the stacking machine, must repay its cost. Some of these costs are continuously changing on account of wage increases and the difficulty of securing both skilled and unskilled labour. The necessary fuel or power for the operation of the plant may come in either by wagons, or through pipes and cables. Operators, staff, and visitors come in on foot, in buses or in cars, all of which need accommodation. To appreciate fully the planning and transport problems arising as a result of such large-scale development, it should be realised that in some American plants the car parks are often double the area of the main manufacturing plant. Further, with a large enterprise, this development is by no means confined to the site. It stretches far out into the hinterlands in roads, railways, power lines, and in housing and service buildings and works.

Problems of Planning

All these things are ancillary to the process building itself in which machines have to be placed, separated, powered, and supplied with materials; gangways have to be of the right width, and overhead clearances sufficient; operators of the machines must be given light and warmth at fixed standards and at the right places. Certain plant items may require special fire protection—an increasingly difficult matter in large open industrial developments. Fumes, dust, and other waste products must be removed. Sections of the plant may require to be supervised from localised offices; finished or partially finished goods must be inspected, checked, packed, labelled, and despatched or temporarily stored or passed on to some other conveyor for sub-assembly. In fact, the whole production process must be planned to flow easily without 'bottle-necks,' without unnecessary labour or waste of interior space, the cost of which is reflected in the price of the product.

Though these matters are basically problems of planning, I am not suggesting that all of the foregoing is the prerogative of the architect. The production engineer, and the plant engineer—indeed most members of the team—must obviously be involved right at the outset, but the architect must understand in detail what is the manufacturing process, what each machine and department does and what space it requires.

It is perhaps in the field of overall planning that the architect's training may lead him to suggest improvements in the

layout and to act logically as the co-ordinator of the various specialist interests involved in the successful development of the project. This co-ordination needs great skill. He must be conversant with and sympathetic towards the activities of each member of the design team. No specialist enjoys being subject to even the lightest control, and the first step is for the architect to establish friendly relations and to show the whole of the rest of the team that he knows his job and that he has a contribution to make to the overall development. Only by this means are the other parties likely to listen to his suggestions. He is essentially a leader, not a dictator, and should accept that on many projects where the major part of the work is engineering, the engineer should be leader.

Obviously, cost dominates the whole business of industrial plants. This is not to say that the construction should be shoddy. Rather the reverse, because if, during maintenance of some of these huge plants, large-scale replacement of materials become necessary, it might almost involve shutting down the whole manufacturing process. It must never be forgotten that any industrial plant has the basic purpose of producing an article or commodity at an economic price and to go on producing it. Moreover, in that price are reflected not only the wages and materials costs, but also the interest on capital expenditure and the cost of maintenance. In this context, the building has to do its job; no more and no less.

Architect's Farsightedness

In the author's view, however, the architect if he is to do his full duty in this role of team leader, has also to exercise another facet of his training, and that is the development of imagination. He has to endeavour to envisage trends in industry, and although that at first sight seems rather a tall order, it is really one which his training fits him to fulfil and which, in practice, many architects do.

In all forms of industrial development, money is being spent from the time the site is acquired. It is not until the products—be they steel, motor-cars, or electricity—come out of the plant, that any money comes back. Therefore, not unnaturally, industrialists want to see the times of preparation, erection, and installation cut to a minimum. Here, the architect and engineer, with, I suggest, the whole of the resources of the professional institutions, should endeavour to educate the client. He should be educated into the acceptance of the view that the date of final commissioning or operation of the plant is the only valid planning date, and, having agreed this date with his advisers, he is precluded from exerting pressure to make a premature start on the site; or to get on with the foundations before the final layouts and the building design have been completed. He must be made to realise from the outset that alterations, delays, and uneconomic construction will surely be encouraged if each stage in the design and planning of the building is not allowed its due and adequate time. Planning of the total project in terms of time is therefore another important duty of the architect. Admittedly, manufacturers being what they are, much of these remarks represent a counsel of perfection.

Although the architect may find an inner satisfaction in a good grouping of building forms, the rhythmic spacing of units, or in the colours and textures of materials, these points are not likely initially to interest many members of the team with whom he is working, or the clients. But after the job is finished and the owners and indeed all those using the building, begin to appreciate its efficiency and its concise overall planning, they may realise that the building is really quite good-looking, and that good looks are an element in efficiency. 'Some industrial developers—and particularly it might be appropriate to refer to the Central Electricity Generating Board as a salient example in this regard—realise that they have a duty to the community, and go to great lengths to avoid structures and planning of kinds which have resulted in much of the industrial slum areas of today. But, more than that, they realise that well-designed, well-planned, and well-constructed buildings are of value to themselves and to the community.

It is probable, nevertheless, that the man-made structure, however magnificent, will still in some instances cause offence. On the other hand, it would be quite wrong for one accepting this view to say that design does not matter, thereby suggesting that the objects themselves are inevitably hideous and inhuman and that it is quite impossible to make them fit in with the accepted principles of architectural landscape design. The problem of siting these large plants in the countryside is largely a problem of 'scale' and half a dozen badly sited and designed houses built in wrong materials can do more harm to the visual aspects of a site than would a nuclear station which could be designed to be in scale with the surroundings.

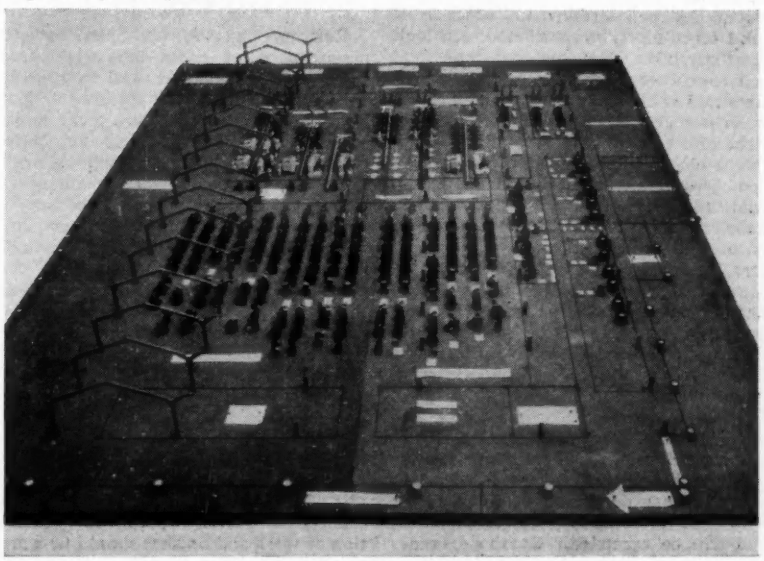
Although it is difficult to be completely analytical about the correct design approach, the cardinal principle is probably to watch the unity of each component part of its structure and its colour and proportion in relation to the whole, so that the whole group of structures shall appear to be an entity and not a huddle of unrelated units. In my view, the design of industrial plants should be approached in this way. The different members of the team, be they plant engineers, production engineers, structural engineers, mechanical engineers, electrical engineers, surveyors or quantity surveyors, landscape architects or architects, should all be aware of this basic aim and each should play his part in its achievement. If this were possible today, even with the complexities of modern technological developments as compared with the Industrial Revolution, a new industrial revolution would arise which could give equal benefits to this small island, and perhaps in due time the plants forming part of this renaissance, if designed in the same forthright manner as their predecessors, would be referred to with similar respect.

Mr. Atkins's Paper

IN HIS PAPER, Mr. Lobb dealt with the overall planning aspects of the housing of large-scale plant; this paper will be confined mainly to the structural problems.

Large-scale plants today range through light, medium, and heavy engineering industries; they include chemical plants in the widest sense, and thermal and nuclear power stations. Plants tend to become bigger as industry concentrates, markets grow with living standards and technical developments, and international competition increases. Even light and medium engineering shops may now cover

Figure 1: planning table



very large areas, and it is common today to think in terms of acquiring several hundred acres for an industrial development, all of which must come from open or agricultural land. Mr. Lobb urges that planning, layout, and landscaping should be recognised as the responsibility of the planners and industrialists in reshaping environments, and I would support that.

Light and medium production plants do not as a rule present difficult housing problems, except those of planning and economics. Where they carry cranes, the latter are generally light in capacity and duty, and the structure is merely strong enough to support them. The demand of the production planner for large open areas, with big spans and few internal columns, is probably overdone. Since frequently the structural designer, the foundation engineer, and the production planner are separate and independent entities, this is a difficult problem to overcome. The production planner may be unaware and left in ignorance of the cost of his demands on structural and foundation works simply because it is nobody's job to tell him. Thus what might have been a simple framework on normal foundations with provision for settlements becomes a complicated structure on piled foundations. The planning table (Fig. I), on which the production flow is marked, is probably the best medium for conveying the housing problem to the architect and the structural engineer, enabling the right questions to be asked to establish the sensible structural solution.

A Place for Aesthetics

It is desirable to eliminate internal rain-water drainage, and it is indeed often economical to do this. Flat roofs may be preferred for this reason alone, although this is not the sole reason for their increasing popularity. Aesthetics, roof insulation, and heating provisions all play their part. Sloping north lighting is not to be recommended in industrial atmospheres, and in roof-truss-and-girder form might not be considered an elegant structural solution today. In fact, the triangulated roof truss is steadily giving way to the open portal frame, which in its solid form, nicely proportioned, can look most attractive. This applies to both steel and concrete construction, and it is possible that in this manner the precast concrete framework has given the lead that structural steel has had to follow.

The class of building discussed in preceding paragraphs includes normal industrial buildings, machine shops, turbine halls, and the like, which in themselves pose straightforward and well defined structural and housing problems. It is those structures carrying high-duty overhead cranes that pose the major engineering problems of future duty uplift, abuse, fatigue, and maintenance. Some knowledge of the process is necessary to determine the solutions within the boundaries of sensible economics, for the simple data of wheel loads and a British Standard Specification are not enough to produce the proper answer. Rated plant capacity, for example in a rolling mill or a furnace, is something to be exceeded, and will be exceeded. Overhead cranes will skew, be used for pulling a train of wagons, or even to drag out a fallen furnace hearth from an adjacent bay. Except for the skewing of cranes (and crashing them into buffers to straighten them out) these incidents are not everyday occurrences, and so long as the structure does not collapse or sustain permanent injury under such abuse, and adequately fulfils its normal high-duty functions, it can be considered satisfactory.

The bogy of fatigue on girders and supports is ever present. To design a structure robust enough to enable this to be ignored (if that is possible) during the working life of the plant would be wholly uneconomic. Logically then there is a sensible balance between initial capital expenditure and subsequent maintenance, and regular maintenance on a building structure of this class must be accepted as it is for the process plant beneath. This approach is not universally understood either by the designer or by the building owner. It is essential that the designer should consider a structure carrying moving parts as a piece of plant and design it as such, using a comparable design philosophy, then rounding off his work with a statement of the planned maintenance required; for his design sets that standard. It is also essential that the building owner should educate his maintenance staff to carry out that routine work on the structures in the manner prescribed.

Dynamically loaded structures need careful consideration of connection details to avoid loosening and consequent fretting or failure of elements. For economic reasons it may be preferred in foundation design in poor ground to allow some lateral and vertical movement; and in order to maintain crane-track alignment provision has to be made to enable crane girders to be adjusted vertically and laterally in the future, although the girders must be held by connections that will not work loose or fail in fatigue. The design and detailing of crane tracks should be the object of much greater attention than is usually the case.

Maintenance Considerations

Reference has already been made to maintenance of these industrial structures, and it would be well to consider this further. It is a feature of most large-scale plants, involving great capital expenditure on increasingly automated plant, that three-shift continuous working is the basis of planning and operations, that down-times are to be kept to an absolute minimum, and that shut-downs should occur only at annually prescribed times. This means that operation and plant planning is such that prescribed regular maintenance can be constantly carried out without hindrance to production. It might be said that one satisfies process demands and then plans for maintenance. This applies also to the housing structures, which should be considered as part of the plant and be planned and designed for maintenance. Particularly is this so in the less accessible areas above crane-girder level, where the specification of work and finishes should be aimed at minimum maintenance. In this roof space will be the shop-lighting provisions with ready-access gangways, which should be reached independently of the crane-girder walkways. All operational overhead crane tracks should be provided with walkways planned to give safe occupation while the cranes are in full duty use. At suitable spots in the length of each shop there should be a crane repair bay, in which cranes can be overhauled.

Those housings enveloping static plant need little reference in this paper. The design flows directly from the loadings and requirements set by the plant manufacturer. Even so, they are complicated in that they are virtually multi-storey plant buildings with service and platform levels laboriously detailed around plant items, the information for which is invariably too late. It is time that the plant manufacturer learned to divide his drawing office procedure into two parts—the first supplying that information which enables foundations and structures to be completed ahead of his arrival at normal programme speeds, and the second to enable the purchaser to check that his process requirements have been met and to order his secondary plant.

Integrated Plant and Housing

In certain sections of industry the housing and plant tend more and more to become one, and the greater is the need for closer collaboration between the mechanical, structural, and civil engineers, and with reluctance (let us face it) the architect. Engineers, with some feeling and truth, are of the opinion that they have enough to do in settling their own differences, without complicating the issue with flights of fancy. But it is possible that that feeling and truth lie in their inability to overcome their own shortcomings, and that with greater experience and confidence it will become both necessary and desirable to pay proper attention to aesthetics.

Mention has already been made of the importance of close collaboration between the various engineering groups and the architect as technical progress increasingly combines the housing and the plant. The plea is familiar, and is sometimes made as part of a sales effort, and sometimes because it sounds good; but it is doubtful whether this collaborative planning need is properly understood, or if implemented, where it may lead. It must be borne in mind that from a capital apportionment aspect alone, it is no longer possible to give undisputed lead to the mechanical engineer. It may well be that some of these technical developments have reached a stage where we should stand aside and consider whether they are not demanding more capital expenditure than is absolutely necessary. In the boiler house of a modern power station, the plant, almost wholly because of its expansion problems, is suspended from the roof, taking the whole of the loads up to a great height and demanding a heavy structure. Is it not possible that developments in other fields might enable the boiler plant to be placed on normal foundations and effect a great saving in the capital cost of the structure? Similarly, should not the development of

the rubber-tired crane with all its advantages lead in certain cases to the replacement of the overhead crane by a rubber-tired goliath, running on a simple concrete strip even on bad ground, and permitting the reduction of the structure to a mere shed? There must be many other examples and they may have great influence, not only on capital cost but on the speed at which a plant can be built, which in its turn seriously affects the total capital outlay. When developments of this type come into being, and then only, can it be said that collaborative effort is becoming truly exercised and effective.

Since the economics of a project under construction are partly determined by its management and finance control, it follows that engineering solutions should permit application of these important factors in the simplest possible form. This should apply to all construction expenditure, but emphatically does it apply in large-scale industrial undertakings. In large-scale works the expenditure is vast, often running into many tens of millions of pounds, and the vastness of the total inclines people to carelessness. There are then certain management aspects that greatly influence the design and planning of these structures. The total structures themselves generally represent a relatively small percentage of the total capital outlay on an industrial project. The technical information for their design and planning is probably the easiest to arrive at in experienced hands. The slowest technical information, which affects construction, is that coming from the plant manufacturer to be interpreted in foundations and services. Sensibly then it is desirable to go ahead with all the general civil engineering works and the building foundations, and get the structures up and wholly or partially clad as quickly as possible so that second-stage engineering work in plant foundations can proceed under cover when the later plant information is to hand. There is a need for reducing the work to be done on a structure in the air, which is affected by weather or prevents others from working beneath. Since the plant and its attendant services take the longest time to install, these aspects are of great importance, for once the spending machine of a large industrial project is set up, it cannot be stopped; time is of paramount importance and delays are extremely costly. It is not possible to emphasise this too much. If those who are familiar with large-scale industrial plants stop to consider the history of progress of jobs already past, they will agree that the building structures are the key to the programme. Fabrication of structural steelwork does not always prove the greatest hurdle; it is the speed of erection that remains lamentably inefficient. It is a pity that the high standard of management and execution of structural work on the site that is evident elsewhere has not been achieved in Britain.

The Week in Parliament

From Our Own Correspondent

Prefabricated Farm Buildings

THE MINISTER OF HOUSING AND LOCAL GOVERNMENT was considering whether, as briefly reported in our last issue, a useful purpose would be served by trying to produce with the Minister of Agriculture and the Council of Industrial Design, a technical publication about the design of farm buildings, said SIR KEITH JOSEPH, Parliamentary Secretary, Ministry of Housing and Local Government, on February 24.

He was replying to an adjournment debate initiated by MR. WILLIAM DEEDES on the appearance of farm buildings. Mr. Deedes had pointed out that the Town and Country Planning Act 1947 and its successors exempted all farm buildings from comprehensive planning control, but from February, 1960, all farm buildings of 5,000 sq. ft. and over had been decreed to require planning permission with certain refinements. If, however, the farmer appeared to get, as it were, 'on the nod' permission for a vast, white asbestos structure on the crest of the Downs when his neighbour was refused permission to build, as he saw it, a discreet, architect-designed bungalow on the fringe of a village, a difficult situation arose.

Much more could be done with a little imagination, forethought and consultation about agricultural buildings with no extra charge on the industry. The roof of a Dutch barn, a milking parlour or a pig house cost no more when it was at the right pitch than when at the wrong. It cost no more when it was well-sited than when ill-sited. He was not asking that traditional materials should be used for these were extravagances. He preferred to accept the simplest and most economical product made of the most modern materials from the factory provided that it had had thought and the hand of an architect who had the right considerations in mind.

Two bodies had illustrated in a practical way what he was theorising about. The Country Landowners' Association last year held a successful farm buildings competition in which 123 people entered, and the Council of Industrial Design had sensible ideas, but not only on how to achieve good design but on how to persuade other people to adopt them.

SIR KEITH JOSEPH said that with new discoveries and methods, farmers were being offered a range of new materials for buildings and other structures, and it was not surprising if they needed help, advice, guidance and even perhaps pressure to put up their buildings and structures with the maximum practicable attention to design and siting.

Consultation had been encouraged by the Minister, who had urged local planning authorities in a recent circular to seek meetings with the National Farmers Union and CLA, to be attended also by lands commissioners of the Minister of Agriculture. The Agricultural Research Council of the Ministry of Agriculture had set up a farm buildings unit which would make a great contribution to improving the materials and designs available to farmers. The Minister of Agriculture had encouraged his officers to pay as much attention as was practicable to siting and design when advising farmers on farm improvements. Also he had pursued several opportunities to collaborate with the Council of Industrial Design and had arranged for its officers to address his land commissioners. There had been discussions between officials of the Ministry of Agriculture and the manufacturers of prefabricated buildings. A big responsibility rested on the manufacturers of prefabricated buildings, and if they could pay a little more attention to architecture as well as to engineering they would do a great service to their customers and the community. Of course, farmers wanted the minimum of cost, maintenance and expense, but what they did not perhaps always realise was that a well-designed building did not necessarily cost any more—in fact it could often cost less—than a badly designed building. Good siting should cost no more than bad.

Design of Dwellings for the Elderly

LATER THIS YEAR the Minister of Housing and Local Government is to issue a comprehensive bulletin on the design of bungalows, flats and flatlets for old people, announced SIR KEITH JOSEPH, Parliamentary Secretary to the Ministry, when he replied to a debate on March 3 on the housing of old people. The bulletin will also deal with converting property so that it is suitable for the elderly.

Recalling the 'refreshing though minor' controversy there had been between MPs during the debate about different ways of solving the housing need of the elderly, Sir Keith gave what he thought were three vital 'don'ts.' He said it was not sensible to build for the elderly without taking a great deal of care to make their accommodation suitable; it was not sensible to build and site the accommodation away from access, shops and other people; it was not sensible to build large colonies for the elderly where they might be isolated.

What was needed was that there should be built flats, bungalows or flatlets, or that the same results should be achieved by conversions, carefully sited in the midst, wherever possible, of other human activities, of easy access and in such numbers that they could easily be integrated in the local community. Careful attention to detail of the design of the new building or conversion was important.

The Covent Garden Market Bill

ABOUT THREE DAYS have been devoted by the Select Committee of MPs considering petitions against the Covent Garden Market Bill into hearing evidence on the implications of siting the market annexe at the junction of Old-street and City-

road, Finsbury. The investigation delved deeply into the traffic engineering problems involved when the annexe was constructed on this St. Luke's site.

Strong criticism of the proposal was voiced by MR. GERALD GARDINER, QC, when he presented the case for the petition lodged by the boroughs of Finsbury and Shoreditch. He produced a map showing the route traffic would have to take from the docks to the annexe and then to Covent Garden, pointing out that traffic would have to travel through the junction of Old-street and City-road, just the place where additional traffic would create the greatest difficulty. At peak hours the average speed of traffic there was only 3.7 mph. Amid laughter he commented that the only explanation of what had happened looked as if the Minister of Agriculture had said to some one 'look around London and see if you can find the best possible site for this annexe,' but the man had misunderstood and had searched for and found the worst.

The Select Committee could say 'no' to the proposal in two ways—by a special report to the House stating that wherever the annexe went it should not go to this site, or by deleting all reference in the Bill to Finsbury land, which would at least have the effect of putting the site on a level with any other site on which the market authority might want, with the permission of the Minister, to put the annexe.

MR. GEORGE HEBSON, borough engineer and surveyor of Finsbury BC, detailed existing or proposed housing schemes in the area and referred to the proximity of six schools and the Moorfield Eye Hospital. The proposed site was most unsatisfactory.

MR. HAROLD WILLIS, QC, for the promoters, the Government, said no one would argue that there was not a substantial traffic problem at the junction. That was recognised by the LCC who were to construct a large roundabout which would considerably increase the capacity of the intersection. As a further step the LCC had in mind to provide a flyover. MR. HEBSON said he knew of that but felt that it was no more than a matter of hopeful discussion at present. The annexe proposal would attract exceptional traffic.

Traffic Flow Saturated

MR. J. L. SHARRATT, borough engineer and surveyor, Shoreditch BC, said traffic flow was already saturated. He told Mr. Willis that the scheme for a flyover at the junction would eliminate his objection to the annexe on traffic ground. When Mr. Willis said that if the annexe was authorised it would give the LCC and Shoreditch and Finsbury councils a very good argument for pressing the Minister to sanction the flyover, Mr. Sharratt said the annexe would be built first and then they would be deciding the road pattern based on that afterwards. This was completely crazy.

MR. N. R. C. DOCKERAY, assistant secretary at the Ministry of Agriculture, told Mr. Gardiner that there was as yet no plan for the annexe. This was a matter for the market authority to decide with the Minister. He would be surprised if the building cost anything like £5m.

An adverse opinion of the site by the Commissioner of the Metropolitan Police was conveyed by Mr. John L. Waldron, assistant commissioner in charge of traffic and transport. He said that a significant movement of traffic between Covent Garden and the site would be generated by the annexe. The roundabout proposal was welcome but even with that and the flyover, the extra weight of market traffic would be a serious feature.

Widening Old-street

MR. ARTHUR CLAYTON, divisional engineer of the improvements division of the LCC, produced plans of the scheme already approved in principle by the Minister of Transport for widening Old-street. He expected that the site would be acquired and cleared by March, 1963, and that the work would spread over two years to March, 1965. The chief engineer's advice was that at the next stage there might be superimposed a flyover and the roundabout had been designed to fit that eventuality. They would endeavour to see that the entry and exit to the annexe were such as to minimize interference with traffic.

Other Business

Future of Coal Exchange

MR. TOM DRIBERG asked the Minister of Housing and Local Government on February 28 if he had any further information on the possibility of delaying the demolition of the Coal Exchange.

SIR KEITH JOSEPH, Parliamentary Secretary: 'The Corporation of London have agreed to defer for three months any further steps towards demolition to provide a further opportunity for proposals to be put forward for the re-erection of the building elsewhere.'

Railway Building Plans

MR. ERNEST MARPLES, Minister of Transport, replying to an adjournment debate on February 28 about the inadequacy of Hounslow East Station, said the London Transport Executive were aware of the shortcomings and intended to rebuild the station. It also hoped as part of the scheme, and if it could get planning permission, to develop the large area of land on the south side of the line. It was preparing outline plans for a scheme but he could not say at present when it would be able to start work. That would depend on the amount of money available for capital investment over the next few years and on the priorities given to such work within the investment limits. Plans for this year included making good the war damage at the Bank tube station and for a new platform at King's Cross which was a very busy Underground station.

Safety in Building

MR. JAMES BOYDEN asked the Minister of Labour on March 1, how many new schemes for training young persons in safety measures had been started in the building and civil engineering industries since the issue of Command Paper No. 953 in February, 1960.

MR. JOHN HARE: 'Safety training for young people normally forms part of their general training. This subject is figuring in such training to an increasing extent.'

MR. BOYDEN said that while that represented some progress did not the Minister think that a very much greater effort was needed? The report said that there was not a large number of schemes to cope with safety for young people.

MR. HARE said they must call the attention as much as possible of both old and young in industry to the need for safety consciousness. The safety aspect was dealt with in certain technical schools and he was in touch with the Minister of Education to see whether in the schools and technical institutes it would be possible to stress this even more than now.

£250,000 for Planning Compensation

Supplementary provision of £250,000 is required by the Ministry of Housing and Local Government to meet the payment of one large claim for compensation for refusal of planning permission under the Town and Country Planning Act, 1954, and on March 1 a supplementary estimate was presented to the Commons for that amount.

Up to March 6 the Ministry gave no details except that the claim was made by a private company and that considerable land was involved. It seems that negotiations with the claimants have been concluded unusually quickly so that an amount previously expected to fall due in 1961-62 will now have to be met before the end of March.

*** It was announced on March 6 that the company compensated is the Lower Thames Development and Construction Co. Ltd., whose claims arose from refusal of planning permission in October 1958 for development of an industrial estate at Renwick-road, Barking.

The Victoria Tube Project

The Minister of Transport, MR. ERNEST MARPLES, was still unable to give any decision on the proposed Victoria underground railway to north-east London, when he was questioned on March 1. MR. ERIC FLETCHER complained that they had been promised a decision for a very long time, MR. MARPLES said a complete reorganisation of the British Transport Commission was going on. The Victoria tube project must be considered in the light of that reorganisation and also in the light of the plans the commission were putting forward for their four-year modernisation. It did not mean that the decision would be postponed for another two or three years. The commission had placed before him their four-year programme. He had asked for more details and this item would be considered in the context of their modernisation programme.

Schools Costs Per Place

MR. JAMES BOYDEN asked the Minister of Education, on March 2, if, in view of the increase in building wages, he now proposed to increase the allowance per place for building new schools.

SIR DAVID ECCLES wrote: 'Increases averaging 7 per cent were announced in a circular issued yesterday.'

Ideal Home Exhibition

Comparisons with Continental Products

THE DAILY MAIL IDEAL HOME EXHIBITION, which opened at Olympia on Monday last, March 7, has again attracted a large number of exhibitors, including many from abroad. This makes it easy, and interesting, to compare, say, the Swedish kitchen furniture with our home units and the Norwegian pin log bungalow with the British built houses in the 'village.' The exhibition is open until April 3.

Among the more brilliant displays is that of ATLAS LIGHTING LTD., who are showing their new 'A-plan' series of fluorescent fittings. They are designed to permit fluorescent lighting in the home to be planned easily and give scope for a variety of effects.

An attractive new series of lighting fittings, designed by PHILIPS ELECTRICAL LTD., can also be seen in one of the show houses. This is a four-bedroom detached house built by CROUCH LTD., for which RUBEROID have supplied a two-layer built-up roofing specification with a cap-sheet of 'Glasphalt.' This is made from glass fibre with a bitumastic base and has not previously been publicly shown. Also on view for the first time is a new, de luxe, version of the GEC home air firelighter that ignites good quality bituminous coal in an open fire in 1½-4 minutes.

Another bright display is that of THE WALPAMUR CO., LTD., who, in the slatted ceiling of the walkway of their stand, have a 'rainbow' of new colours. These are made by the simple 50-50 mixing of standard colours. They are also demonstrating various interior colour schemes, as are GOODLASS WALL AND CO., LTD., who feature harmonising colours in 'Valspar' lacquer, emulsion and eggshell lustre.

THE MARLEY TILE CO., LTD. this year, are emphasising their newer floor coverings: Marleyflor Consort sheet vinyl, Marleyflor 9 in. sq. tiles and Marleytred felt-backed vinyl.

Arborite, a surface laminate from Canada, is exhibited by the ARBORITE CO. (UK), LTD. It has a wide range of colour and effect, with wood grains, marble finishes, inlays and silkscreen designs. WARERITE-BAKELITE LTD., also display a large range of their laminated plastic furniture and fitments surfaced with Warerite veneers, whilst VIPBOARD (GREAT BRITAIN) LTD. are showing their chipboard veneered on all four edges as well as both faces, and available in 20 standard sizes.

Two rooms, traditional and modern in feeling, are the central feature of the ARTHUR SANDERSON stand in which they display wallpapers and furnishing fabrics ranging from exclusive hand-printed wallpapers to inexpensive machine-printed designs. A number of specialised wall coverings should be particularly interesting to designers and architects. JOHN STEVENTON & SON, LTD., have introduced a new range of Royal Venton fireplaces in glazed tiles and faience, designed by Arthur Mattison. They have made a special feature of designs in eggshell plain and mottled colours as well as tiles decorated with a new multi-colour lithograph of modern style.

For the practical householder, S. N. BRIDGES AND CO., LTD., are showing their power tools, the 'Neonic' drills with home workshop and gardening attachments, including the new 5/16th in. drills and a chain saw attachment for cutting logs and heavy pruning. Mr. Cliff Bower, a well known tool expert and writer, is at the SURFORM stand making household and garden furniture with the aid of Surform hand tools and power tools. An illustrated booklet contains details and drawings of some of these attractive units. On another stand WOLF ELECTRIC TOOLS LTD., are demonstrating their Safety-master and Cubmaster ¼ in. electric drills. They are also presenting a 22-minute colour film which covers all the uses of the Wolf tools.

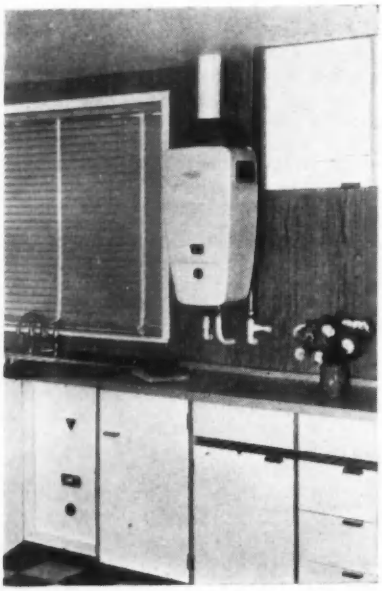
GYPROC PRODUCTS, LTD., are featuring Gyproc Cove, which fits to the wall and ceiling angles of rooms to improve the appearance, and hides any cracks caused by structural movements.

In the modern house, chimneys and flues may be on the way out, for some of the latest oil and gas fired boilers are designed to expel the exhaust gases through the side wall. PERKINS BOILERS, LTD., have a fully automatic boiler, (incorporating an oil service tank) without a chimney or flue. This is virtually a portable self-contained unit in a cedar wood compartment, which avoids the necessity for a boilerhouse, and is designed to fit against the wall of a garage or a dwelling house without structural alterations. It is a horizontal multi-water tube boiler working at a pressure of 30 lb. per sq. in. to provide a high temperature. This permits its use for rapid water circulation without a circulating pump, delivering the high temperature water to a heat exchanger.

All the exhibits of SUNROD DOMESTIC BOILERS LTD., incorporate a special heat exchanger system. With this, the water

Among the dwellings at the Olympia 'village' is a block of show flats exhibited by New Ideal Homesteads Ltd. It is representative of their range of purpose-built luxury flats now being built in the Greater London area and south-east England although elevational design, planning and treatments vary in accordance with local authority requirements and the existing surroundings

An interior view of the 'Peer Gynt' pine log bungalow. For the spacious lounge a suspended copper-cowled fireplace has been designed by the Norwegian architect, Mr. A. M. Bredesen, MNAL, AADip. Underfloor heating with thermostatic control has been installed throughout the building



Radiation's compact Parkray G.604 gas-fired central-heating unit fits easily on the kitchen wall to save floor space. The electric accelerator pump can be accommodated in a cupboard below. The unit will provide full central heating throughout a three-bedroom house

tube in the boiler is covered with dozens of highly conductive copper rods which reach out into the stream of hot gases from the heat source, absorb a maximum amount of heat and transfer it quickly to the water. In this way the actual heat exchanger surface is increased as much as three times, allowing for smaller, more compact designs in high-efficiency boilers.

JANITOR BOILERS LTD., besides exhibiting a range of domestic hot water and central heating boilers, are showing their 'Housewarmer,' a warm air heating cabinet for use with small bore hot water systems. In this, an electric fan blows warm air from a heater battery into the room. Designed as an elegant piece of furniture, it is available in two sizes.

On their stand EDA demonstrate eight different methods of using electricity for whole-house heating. There is also a scheme for having hot water all round the house at a cost of £14 10s. Meanwhile the GAS COUNCIL are going out to attract the younger generation by linking ten of the latest gas appliances with tunes from the current 'hit parade.'

Among some new ideas for the kitchen, a ductless cooker hood, exhibited by PEERLESS BUILT-IN-FURNITURE, is worth attention. The hood, which can be fitted over any cooker, contains a filter bed of activated charcoal through which a fan draws the fouled air. This is purified and blown out again into the room. The charcoal needs replacing only once a year.

Another new idea, of eminently practical use, is the Ice-Pak/Hot-Pak on the CANADIAN GOVERNMENT stand. This is a small plastic bag filled with a chemical which, when put into boiling water for five to ten minutes, will stay hot five times longer than a hot water bottle. Conversely, if briefly frozen in a refrigerator it remains cold for five times as long as ice. It is ideal for keeping beer cool.

Fourteen separate bathroom settings have been devised by ALLIED IRONFOUNDERS LTD., in which good use has been made of colour to achieve different effects. One bathroom has been specially designed for children and is equipped with a low-cut Vogue Royal bath with an anti-splash rim and provision has also been made for elderly people by means of an Atlanta bath, flat-bottomed and cut low at the sides, with alternative tap positions and an adequate and sturdy handgrip. THE MINISTRY OF HOUSING AND LOCAL GOVERNMENT are exhibiting a large model of flatlets—3ft. high and measuring 10ft. x 4ft.—which are also specially designed for the elderly. The model on display is of a two-storey block built by Brighton Corporation to the Ministry's designs and particular attention has been paid to giving easy access to opening and shutting windows, putting shelves and cupboards within easy reach and using non-slip floor covering for stairs and corridors.

Southern Counties Building

Exhibition at Brighton

THE FIRST POST-WAR BUILDING EXHIBITION at Brighton was opened on March 4 at the Corn Exchange and Pavilion Theatre by the Mayor, Ald. A. J. M. Johnson jointly with Mr. W. G. Smith, President of the Southern Counties Federation of Building Trades Employers which is officially supporting the event. THE MAYOR said that the exhibition would fill a need in the Brighton area and expressed the hope that before too long the town would have an exhibition hall of a size to permit a full-scale show. He also congratulated the technical schools in the area on their craft displays—a point which was endorsed by Mr. Smith. Both speakers congratulated Mr. Jack D. Rose, of Jack D. Rose (Exhibitions) Ltd. on organising the show.

Though small, being necessarily limited by the size of the Corn Market, the exhibition is well laid out and mounted. MASONITE LTD. show their 'Prestwood' grainless wood in various forms (stand 4) while 'Wrighton' kitchen furniture with a new high-gloss, scratch-resistant surface is demonstrated on stand 5 by WALKERS (BRIGHTON) LTD., a firm which also operates a kitchen planning service. This idea of giving a service as well as selling a product is also followed out by R. R. PERRY & SONS LTD. which, in addition to being main distributors of 'Dulux' and 'Dulite' paints, will assist in the preparation of colour schemes using any decorative materials (stand 7).

Structural Glazing Units

NUBOLD DEVELOPMENT LTD. on stand 15 show their product 'Nubindex' which is a silicone treatment for porous building materials claimed to be most effective as a water repellent. On stands 17 & 18 the ATLAS STONE COMPANY, LTD., show a number of their products including 'Windowall'—a slender, factory-made reinforced concrete glazing unit which, when bedded together in numbers in cement mortar, forms a self-supporting glazed wall of good appearance and high strength.

JABLO PLASTICS INDUSTRIES LTD. show an interesting application of 'Jablite' roof insulation suitable for most forms of building construction. On their stands (nos. 26 & 27) may also be seen other developments — for curtain walling, insulation of concrete soffits by using 'Jablite' as permanent shuttering, and for a floor insulation in conjunction with electric floor warming systems. On stands 27 & 28, NORSTEL AND TEMPLEWOOD HAWKSLEY LTD. demonstrate their 'Permatite' range of bronze windows which (manufactured under a USA licence) have some special features which include freedom from maintenance and from jamming, draughtproofness, and pre-glazed sashes which may be lifted out for cleaning.

Housed in a well-designed demountable stand (nos. 38-43 and 9) HALL AND CO. LTD., the Croydon builders' merchants, have a most comprehensive display of the materials and equipment which they stock and deliver (22m. miles annually are covered by their fleet of 1,200 lorries). Special display is made of a series of plain and interlocking tiles, while methods of insulation by suspended ceiling and wall-lining are demonstrated. On stand 49, BERRY, WIGGINS & CO. LTD. show the uses as waterproofers of bitumen in various compounded forms under the name of 'Aquaseal.' Black bitumen 'Tensulac' paints are also on show.

A Picasso on Show

'Paragon' kitchen cabinets and flush doors—the former in a new range designed for 1961 with natural beech framework and surfaces cellulosed in pastel colours—are demonstrated by JAYANBEE JOINERY LTD. on stands 52 and 53. The flush doors include a cellular-core hardboard product with a sealed face that requires no priming. THE NATIONAL COAL BOARD (stands 57-60) give advice on heating problems and solid fuel appliances, not least on the Board's house-warming plan by which installations can be repaid over five years. The well-laid-out stand breaks fresh ground in exhibition design by showing an excellent Picasso print in the show living room.

Finally the exhibition is supported by both THE SOUTHERN COUNTIES FEDERATION (the representative organisation of building trades employers throughout the eight south-eastern counties) and by the SUSSEX ASSOCIATION OF BUILDERS' FOREMEN & CLERKS OF WORKS which brings to the notice of eligible men the advantages of association membership.

The exhibition closes on March 11.

The Northern Polytechnic

Presentation of Prizes to Students of Building

THE CONTRIBUTION by the Northern Polytechnic to architecture and building must surely be without parallel in the realm of technical education; the School of Architecture alone is numerically the largest in England, having 600 students currently in training. In July last year MR. C. G. BATH, FRIBA, as head of the departments of architecture, surveying and building, submitted his first annual report since taking over from T. E. Scott. On February 28 it was the turn of the building department, in which no less than 400 students are in training.

Before handing the meeting over to Mr. C. G. Mant, CBE, FRIBA, Director-General of Works, Ministry of Works, to address the students and present the prizes and certificates, MR. BATH dwelt briefly upon a significant year in building education—a year which saw a revision of the craft courses by the City and Guilds of London Institute, the RICS conference on education at Bangor, higher entrance qualification for the professions, the Institute of Builders' revision of its examination structure, and the LMBA scheme to link training with experience. The speaker concluded with a tribute to Mr. T. J. Drakeley, CBE, principal of the Northern Polytechnic, who was making his last appearance before his retirement at the end of April after more than 30 years at Holloway-road.

Addressing the students, MR. MANT did not concern himself directly with education or the curriculum, but emphasised the importance of and collaboration between the individual professions within the building industry, epitomising a typical project from the client's brief to the final account. He showed how the increasing complexity of the operation was made even more so by the varied and continuing changes in techniques, and the increasing number of specialists involved. He advocated strongly the importance of collaboration at all stages.

Other speakers were MR. S. J. PROOPS, FIOB, who submitted the vote of thanks to Mr. Mant, and MR. S. C. PARRISH, who did likewise for the chairman, Mr. Brian Roberts, MA.

The following students received prizes:

PLUMBING.—R. S. Forster, R. H. Dring, F. G. Smith, J. Margetts, M. J. James, B. C. Wright, P. A. G. Williams, R. Seedhouse and A. J. Lawson.

CARPENTRY AND JOINERY.—V. C. Boyle, C. Doyle, J. F. Marnes, R. J. Kane, L. J. Smith and D. M. Lee.

BRICKWORK.—M. Gilbert, J. Bunyon, D. Atkinson, D. B. Padfield, D. Pawson, T. Kendle and K. Hollingshead.

PAINTING AND DECORATING.—M. James, D. T. Lloyd, R. Parkhouse, P. Bussey, J. H. Parsons and R. Button.

Hospital Building

Exhibition of Materials and Equipment

A TEMPORARY EXHIBITION has been organised at the Building Centre, London, by a committee representing the Ministry of Health, regional hospital boards and others closely connected with the building of hospitals. It is being staged for one month only from March 10 in the exhibition gallery and its aim is to show currently used material and equipment of good design and of manufacture suitable for hospital needs.

Following the increase in capital sums available for hospital building, the Building Centre intends to establish a permanent hospital section devoted to materials and equipment of particular interest to the sphere of hospital design and construction.

It is appreciated that a high proportion of materials and equipment for hospitals is not peculiar to hospitals and can already be referred to in the several sections of the Centre; the hospitals section will therefore concentrate on showing desirable modifications to general practice to achieve the correct function in hospital use. It is hoped that the exhibition, in addition to being a source of profitable visit by architects, engineers, medical, nursing and administrative staff, and members of building committees, will also be a source of stimulation to manufacturers and by this means lead to economic but suitable standards in building.

The temporary exhibition illustrates typical examples of a combined consulting/examination room for an out-patient department, a four-bed ward for a medical or surgical ward unit and a student nurse's bed-sitting room. It will close on April 8.

Building in the City

Multi-Purpose Building Approved for Aldgate High Street

PERMISSION for a five-storey building to be built at Nos. 57 to 60 Aldgate High-street with shops on the ground floor, offices on the first and second, and light industry on the third and fourth, was given at the Court of Common Council of the City of London, at its meeting on March 2. (Architect: Alexander Flinder, 306 Wimpole-st., W1.)

The Council approved the plans submitted and approved the erection, subject to certain conditions to ensure conformity with the proposed building lines, the proper replanning of the area, and the free flow of traffic.

The Council also permitted the development at 38 and 39 Houndsditch of the erection of part of a proposed basement and ground floor to the existing building line, for a limited period, subject to certain conditions. The permitted development must be removed by March, 1968, and reinstatement of the land carried out. (John Batty and Son, 142/4 Minories, EC3.)

Also permitted, subject to certain conditions, was a seven-storey office block, with part of the basement ground and first floors as a public house at 13 Harp-alley and 80 to 82 Farringdon-street. (Percy V. Burnett and Partners, 12 Bloomsbury-sq., W1.)

The Improvements and Town Planning Committee reported that the proposed demolition of the tower of the Church of St. Alban, Wood-street, for a road widening scheme, should no longer be carried out. This was because of the Court's subsequent decision to proceed with the development of the Barbican area with the omission of the proposed north-south traffic route.

'Unrealistic' Tenders in Worcestershire

Overloaded State of Building Industry Blamed

'RIDICULOUS TENDERS' from builders who did not really want the jobs offered them by the council, were referred to by ALD. F. L. ROSE at a recent meeting of the Worcestershire County Council. Because of the 'overloaded state' of the building industry, he suggested that the council might well be advised to consider spreading some capital schemes over longer periods.

Ald. Rose said the building industry was so much under strain that the council received the unrealistic tenders from builders who did not really want the work to be offered. 'We are paying through the nose time and time again,' he said. 'Many committee members are concerned about getting a job started but in my opinion it is the finishing that counts. Work has in some cases been delayed for considerable periods, with the result that the schemes cost more in the end.'

Commenting on Ald. Rose's observations, ALD R. R. ADAM said he thought the failure to complete a programme stemmed from a number of reasons. Last year had been a poor one for weather, with a consequent loss of hours worked by builders. Second, building trade workers' hours had been reduced. Last, there had been a great difficulty in the building trade in obtaining skilled workers, particularly carpenters.

MR. J. C. CADBURY commented that getting contractors to tender at reasonable prices was one factor holding up capital schemes. He asked if the council had given any thought to employing its own direct labour force. He pointed out that many local authorities employed direct labour and effected 'big savings.' The chairman, MR. MICHAEL HIGGS, intervened to remark that he had not heard of any proposal that the council should employ direct labour.

ALD. ROSE replied that he had thought of a direct labour force, 'but by the time we could do anything in that way the trouble we are in would be over.' ALD. J. A. GAUDEN suggested that the council should call a halt to all building projects for a year 'to give them time to think,' to which ALD. ROSE replied 'a standstill order for a year or two is of course very much to my liking.' He added 'If I thought there was any chance of persuading the council to adopt it, I would try to be very persuasive indeed.'

Builders Form New Combine

'Better Deal' Planned for Small Contractor

FROM A CORRESPONDENT

MEDIUM-SIZED BUILDERS, members of the Bedford and District Branch of the Eastern Federation of Building Trades Employers (as briefly reported in our last issue), are joining forces to ensure that they get a fair share of the building land in the area and, as far as possible, a proper allocation of work.

About 25 of these builders are forming for this purpose a new company—Associated Bedford Developments, Ltd. This company will buy suitable building land in the area and, acting as developers, sell parcels of land to individual members. In cases of major development, the company itself will carry out the construction of roads and sewers.

According to members of the new company's executive sub-committee, one of the main objects of the new scheme is to ensure continuity of work, particularly for the smaller firm. It is argued that as members of the Federation, builders have the responsibility for seeing that apprentices and management pupils get proper training—but unless a future pattern of work can be laid down it is often impossible for employers to discharge their duties and obligations.

Meeting Competition

Another object is to give the local builders a share of the bread and butter as well as of the hard crusts. In Bedford and district large and attractive sites have been snapped up for development by the national companies and because of lack of the necessary finance the local man has, in many cases, stood no chance of competing for the land or the work. The new company will be able to meet the large developers on a competitive basis.

With professional advice, the executive committee—five members—will seek out and buy land suitable for development, and will also handle planning applications, layout, architectural and other details. It will circulate members of the company with news of the land so acquired and will invite applications for the purchase of plots for building in accordance with the approved scheme. The land will be allocated on as fair a basis as possible and will be sold at a price that will give the company a margin of profit. Where applicable, the company will carry out site development.

Each of the 25 subscribers of the company can hold only a single pound A share, which entitles the members to equal voting. There will also be ordinary B shares and preference shares, which members will take up in such proportions as they are able. It is understood that to date the financial holding of the company is substantial.

This money will be used for the purchase of land and it is not envisaged that members will be able to turn to the company for financial backing by way of loans. It is expected, however, that plant will be bought for hiring to members at terms which will, again, give the company some profit.

A spokesman for the company said the profit would, of course, be returned to members in the ordinary way on the basis of the number of shares bought. The whole idea of the scheme, he said, was to give the local builder a chance to meet the challenge of the national builders and developers yet still give all concerned in the company a return for their investment.

Co-operation from local authorities has been invited and according to some reports this is likely to be encouraging. One big point in the company's favour here is that if schemes are carried out by local men with local labour the money tends to circulate in the locality; there is, at the same time, a greater assurance that each local council's wishes will be considered with sympathy.

The scheme has been described by one builder as a 'lifeline'—and it may well be so regarded by others, particularly those with slender resources. In Bedford and district, as in many other areas where land suitable for building is scarce and fetching high prices, the smaller builder has been severely handicapped. It is considered that under the new arrangement he will regain his place (if, in fact, he ever lost it) as the backbone of the building industry.

The entry that secured the first prize of 250 gns. for Mr. W. Rodber, of Taunton, Somerset, in the Jones Crane Photographic Competition. The photograph shows a KL Super 40 crane, which was delivered to its present owners, the Bridport BC, in 1947, loading a lorry on the harbour wall at West Bay, Bridport, Dorset. Other prize winners were: second (100 gns.), Mrs. G. Underell, of London, SW6; third (75 gns.), Mr. B. Turpin, Stanford-le-Hope, Essex; fourth (50 gns.), Mr. P. West, Rickmansworth, Herts. In addition, five consolation prizes of 25 gns. each went to Mr. R. Harrington, Acton, W3; Mr. J. L. Moss, Johannesburg, South Africa; Mrs. R. Tildesley, Bilston, Staffs.; Mr. M. M. Harris, Kingsbury, NW9; and Mr. R. F. Cuthbert, Nairobi

Facing the Future in Building

Need to Adopt New Techniques

A WARNING that the building industry must adopt newer and bolder techniques in order to face the future, was given by MR. SIDNEY LEYSHON, Monmouthshire county architect, at the annual dinner of East Glamorgan and Monmouthshire Valleys Association of Building Trades Employers, held at Caerphilly. Mr. Leyshon said that the industry had changed much less than most other industries, but he foresaw in the near future changes such as an increasing use of plastics and the use of prefabrication. He also urged that all branches of the industry should increase their efficiency to a maximum.

Mr. Leyshon complained of many people's timidity in accepting new designs for houses, and stated that, if progress was to be made, clients would have to accept more revolutionary designs. He said that there was a big shortage of architects at present and commended Monmouthshire county council on the scheme to train their own architects and designers.

Housing Progress in January

Small Increase Over 1960

THE HOUSING SUMMARY presented to Parliament as a White Paper (Cmnd. 1296, HMSO, price 3d.) jointly by the Minister of Housing and Local Government and the Secretary of State for Scotland, shows that the number of permanent houses completed in Great Britain during January, 1961, was 20,840 compared with 20,751 in January, 1960. Of these, private builders were responsible for 12,356 and public authorities for 8,484.

Hong Kong Housing

NUMBER SEVENTY-TWO in the Overseas Building Notes series, prepared by the tropical building section of the Building Research Station, DSIR, deals with the work of the Hong Kong Housing Authority. A supplementary article discusses low cost housing in North Africa and the Sahara region. A number of copies of the Note are available without cost from the Building Research Station, at Garston, Watford, Herts.

Building Education in Scotland

Effect of New IoB Examination Structure

THE IMPACT of the Institute of Builders' new examination structure on Scottish technical colleges was discussed by MR. NORMAN C. SIDWELL, MSC, PHD, MISTRUCTE, ARICS, head of the Department of Building, Heriot-Watt College, Edinburgh, in the January issue of the 'IoB Journal.' The following extracts deal with the general background of traditional Scottish building education, the differences in Scottish law and measurement and the probable general effect on national certificate courses:

It is pleasing to consider that for the very first time since national certificate schemes in building were introduced in Great Britain the Scots have attained the standardisation of curriculum and interchangeability of students between colleges that was manifestly the original intention of those pioneer educationists who introduced the schemes long ago.

With regard to the Scottish schools and colleges, those which make provision for craft training are mostly monotechnic; thus in Aberdeen, Glasgow, Dundee, Edinburgh, Cambuslang, Falkirk and other centres there are schools of craft which concentrate on craft processes and craft technology, though they may make provision for theoretical studies leading to an ordinary national certificate in building; in general, however, national certificate courses tend to be organised in building departments within polytechnic colleges including the central institutions. Several of these central institutions have a close relationship or ordinance of affiliation with their local university and in other respects are perhaps comparable to some extent with colleges of advanced technology in England, though it must be said that so far there has been little enthusiasm in these institutions for the Dip Tech schemes operating south of the border.

A Graduate Qualification

The associateship of two of the leading central institutions is widely recognised as a graduate qualification and when awarded in the grade of first or second class honours it is commonly equated to honours degree standard. This is borne out by the following extract from the 1956 White Paper on Technical Education:

'The full-time courses are of three or four years' duration, and comparable in scope and standard with university degrees. Age and qualifications for entry are usually similar to those for a university degree, except that a foreign language is not essential. The awards thus instituted by the individual colleges have won for themselves an increasing reputation both in Scotland and beyond which testifies to the high standard of instruction provided. The highest awards of the two leading central institutions—the Royal Technical College, Glasgow, and the Heriot-Watt College, Edinburgh—are now recognised as being of honours degree standard.'

Practically all the leading professional institutions accept the Glasgow and Edinburgh colleges' associateship for exemption from the professional examinations and this is perhaps the chief reason for the absence of enthusiasm for the Dip Tech qualification because these Scottish colleges feel that the high standard of their associateship qualification has been universally recognised for many years and the standard of the Dip Tech award has yet to be established.

Scottish Law Different

In sketching the background to building education in Scotland there are many other matters to be considered; it is important to realise that Scottish Law, based largely on Roman law, is entirely different to the system of law as practised in England and Wales. Also the method of measurement used by surveyors and contractors in Scotland is the Scottish Mode of Measurement which again is quite different to the Standard Mode of Measurement. It is understandably irksome and manifestly difficult for any professional institution to frame examination regulations that will take account of the long established laws and customs understood by candidates coming from Hong Kong, Capetown or Auchtermuchty.

The RICS has achieved this to some extent by separate Scottish examination papers and syllabuses, but the yearly total of Scottish students coming forward for the RICS examinations is far in excess of the total of candidates for the Institute of Builders' examinations and quite obviously there must be a reasonable number of Scottish candidates to justify the additional work and expense involved.

Against this background of traditional Scottish independence what then will be the effect of the Institute's new examination regulations? The first move to be made will most probably be concerned with the re-casting of higher national certificate courses to provide full identification with the Institute's examination subjects and syllabuses and in particular to ensure that full account is taken of the possibility of exemption from the new intermediate examination. It is to be expected that the Institute's examinations will have a unifying influence on all Scottish HNC schemes; indeed it could be said that it is the hope of many teachers that the Scottish Joint Committee for National Certificates will not be slow to recognise this unifying influence and will avoid duplication of revisional work in the regional committees by setting up another working party, to make proposals for a common higher national certificate structure in Scotland, together with recommendations for the many endorsement subjects needed to take account of the Institute's new examinations.

One would hesitate to make any prophecy concerning the pattern of a common higher national certificate scheme in Scotland. Certainly one would hope and expect that the newly established common ONC scheme would meet the requirements of the Institute for exemption from the new intermediate examination provided of course that endorsements in the subjects history of building and structure of industry, land surveying, accountancy and office routine were obtained. This suggests a pause of one year at least between the end of the common ONC course and the commencement of the first year of the HNC course. The subjects required for Part I of the final examination—building technology, quantity surveying, estimating, law and economics—cannot possibly be studied in sufficient depth over two sessions of three evenings each.

It might be possible to provide adequate instruction in these subjects if the two HNC years were based on one day and two evenings each week, but as relatively few students in Scotland are likely to be allowed to attend on a day-release basis so it is fairly certain that the study of building technology and quantity surveying will have to be carried over into a third year together perhaps with an introduction to management principles at this point. Finally the formidable hurdle of the Part II examination in management subjects has to be provided for and even if the very desirable introduction to management principles is achieved in the penultimate year, it is extremely unlikely that the essential lectures and group exercises in management can be covered in less than one session of three evenings each week.

On the expectation that the principle of day-release will not apply universally in Scotland for a good number of years, we are left with this chastening prospect of a total of eight years' evening study for associateship of the Institute and one is tempted to ask whether anyone seriously considers that many, if any, students will have the patience and stamina to complete this long and arduous endurance test. No criticism of the Institute's new examination structure is meant or implied here because quite obviously all other professional institutions' examinations present a similar prospect for the evening student, and with so many essential subjects to be covered the trend is inevitably towards full-time study either by sandwich course or other means.

Sampling for Analysis

THE CORRECT METHOD of taking samples of roadmaking material for regular analysis by the engineer is fully explained in a pamphlet on the subject issued by the British Granite and Whinstone Federation. Copies of 'Sampling' may be obtained without cost from the Federation, at 55 Pall Mall, St. James's, SW1.

Utilisation of Small-Sized Wood

A SPECIAL MEETING in the form of a symposium to discuss the utilisation of small-sized wood will be held, under the auspices of the United Nations Food and Agriculture Organisation and the Economic Commission for Europe, in Geneva from March 13 to 18. The meeting will be followed by a one-week study tour of France and the United Kingdom

Lack of Leadership in Building

'A Principal Failure of Management'

BUILDERS from the North of England were told at a management conference in Durham on February 21 that one of the principal failings of management was lack of leadership. Effective management required leadership as well as the power to sack because that power in times of reasonably full employment no longer had the meaning it once had.

MR. D. A. F. SINCLAIR, of Personnel Administration Ltd. (which had managed the conference for the Northern Region of the NFBTE), said: 'Making Joe want to do his best is always a problem and especially so in time of full employment. Personally I have always preferred carrots to sticks and I believe that money still talks sweeter than words.' Incentives were still management's most potent motivator and the best means of eliminating waste of either labour, materials or money. Good leadership in that direction had to be supported by more decisiveness and determination among managements.

'Given a fair lead, both men and unions respect and prefer a frank but firm attitude from the boss,' said Mr. Sinclair. 'He must also get out and about. You cannot keep in touch from the office and I regret to say there is an increasing tendency for managements to become chairborne. Get to know your men and let them know you.

'I am no believer in joint consultation to determine policy or run a business, but the fullest explanation to everyone of what policy is and why it is so is essential. The greatest single cause of labour unrest and strikes is ignorance or half-knowledge of the true facts.' Provided full facts and all the cards were put on the table, there was seldom any major opposition from men or unions to the acceptance of changes.

Apprenticeship in the London Region

Encouraging Increases in Indentures in 1960

THE NUMBER of cancelled indentured apprenticeships dropped from 17½ to 11½ per cent in 1960. The number of indentured apprentices in the industry at the end of 1960 was 3,492, an increase of 34 per cent over 1959. These figures were announced by MR. A. MCCLEERY, chairman of the London Regional Joint Apprenticeship Committee, at the presentation of 1960 National Joint Apprenticeship Board Prizes, performed by Sir Richard Coppock, General Secretary, NFBTO, in London on February 23.

Continuing, Mr. McCleery confirmed the support of his Committee in regard to sponsored transfer and block release. He expressed, however, regret at the recent Ministry of Education decision to close the building departments of the Ealing, Harrow and Woolwich Technical Schools.

Following the presentation of the prizes, SIR RICHARD COPPOCK, CBE, in a reflective and stimulating address, spoke briefly on the industry's past troubles and of the effect a slump in the industry would have on the country, causing, as he put it, 'poverty in all homes.' The need for more apprentices was expressed by Sir Richard. Touching lightly on design, he spoke of the reluctance of the builder to voice opinion on architecture. 'We do not open our mouths as wide on architecture and design in this country as we would wish,' he concluded.

A vote of thanks was proposed by MR. R. F. MANSELL, President of the LMBA, who pointed out that the NFBTO were lucky to have found a leader of the calibre of Sir Richard. He had steered the operatives through bad times into the calmer waters of full employment and prosperity. He was an accomplished and skilful negotiator, and a man whose principles and integrity were respected wherever he went. His retirement would create a gap in the ranks of the industry which would be hard to fill.

The vote of thanks was seconded by MR. J. ROOTES, President of the London Region, NFBTO.

Tottenham Technical College

School of Building to Accept No More Students

THE ANNUAL PRIZE DAY of the Department of Technology and Secondary School of Building of Tottenham Technical College was held recently when the awards for the session 1959/60 were presented by Mr. R. F. Mansell, FIOB, President of the London Master Builders Association.

In his report the Principal, MR. M. C. HEATH, spoke of the phenomenal successes achieved by students and revealed that work had increased from 190,000 student-hours to 270,000 student-hours.

Mr. Heath went on to announce—'with some regret'—that the Secondary School of Building could not accept further students, and that the two-year course would finish in 1962. In its place, a pre-senior full course has been opened for students between the ages of 15 and 16. The present senior school staff were gradually being transferred over to further education.

He said that the record number of 1,200 further education students had now been enrolled, and that examination successes this year were well up to the national average.

MR. R. F. MANSELL, in a short speech, paid tribute to the work of the College and congratulated the teaching staff and pupils who had made the year an outstanding success.

Building Safety on the Continent

Some Impressions of Sites in Italy and France

DURING A RECENT VISIT to construction sites in Italy and France, MR. W. D. SHORT, BSC, HM Senior Inspector of Factories for building and civil engineering, found that other European countries were as much concerned as the United Kingdom with accidents during construction work. In an illustrated talk, given at a recent general meeting of the London Building and Engineering Contractors' Accident Prevention Group, Mr. Short said that his visit had primarily been to attend an international committee dealing with such accidents.

Mr. Short toured a partially completed nuclear power station, being built to British design, where he noted a high standard of tidiness despite constant activity. Here the site safety organisation was controlled by the equivalent of our Ministry of Power or the UKAEA. Each contractor had to appoint a safety officer and, under the authority safety officer, regular meetings were held.

Among the accident prevention devices seen, the speaker had been impressed by a simple robustly constructed cover used for holes made from 1 in. by 1 in. steel angle frame with ¾ in. diameter tubes welded across at 1½ in. centres. The advantages were that the hole could be seen through the cover and, since it was entirely unsuitable for any other purpose, it was not likely to be removed. Access ladders were fitted with handrails and many had safety strips and loops even when used at the normal angle.

Electricity was supplied by underground cables which were clearly marked by metal signposts every 20 yd. to guard against their being fouled when excavating. Each signpost showed the depth of the cable and the voltage.

At another large construction site, that of the new Alpine tunnel under Mont Blanc, Mr. Short noticed that the first aid facilities were poor, although a machine for giving artificial respiration had impressed him. Safety helmets and clothing were worn on both sites. On the Mont Blanc site transport to the tunnel face was good, and there were separate trains for men, materials and explosives. Drilling and spoil handling machines were adequate and had good access, but this standard was not achieved everywhere.

Mr. Short concluded by showing a number of slides, after which MR. J. A. HAYWARD, OBE, proposed a vote of thanks.

Air Pollution and its Effects

FILMSTRIPS and lecture notes dealing with the nature, production and effects of air pollution: its dispersion and accumulation: the behaviour and appearance of smoke; and the cause and effect of chronic bronchitis, one of the more serious results of air pollution and overcrowding, may be obtained at moderate prices from Diana Wyllie Ltd., of Baker-street, London, NW1. The notes are by Dr. R. S. Scorer and Dr. J. L. Burn.

Flood-Damaged Buildings

Notes on their Repair and Renovation

This note—issued by the Building Research Station (DSIR) and prepared in collaboration with the Forest Products Research Laboratory—discusses the problems that are likely to be faced by architects, surveyors and builders who have to deal with property damaged by flood water. The problems are dealt with under five headings: cleaning and drying, effect of water on materials, structural damage, renovation of interiors and the use of flooded stocks of building materials. The note is intended for the guidance of architects, surveyors, builders and decorators undertaking the repair of buildings damaged by flooding. Although it is concerned primarily with traditional methods of construction in brick, stone, concrete, timber, etc., most of the remarks apply equally to other kinds of buildings. The note deals only with flooding by fresh water.

Cleaning and Drying

(a) CLEANING. Apart from the normal cleaning up of mud and silt, any earth or mud that has accumulated against the walls above the damp-proof course must be cleared away as soon as possible otherwise it will hinder the drying of the walls.

Mud that has found its way under boarded floors should also be removed. If the under-floor space has not already been sprayed with disinfectant for reasons of health, the local authority should be consulted so that their recommendations can be implemented at the same time.

The flooding of *ventilated* cavity external walls may leave mud bridging the cavity above the damp-proof course; if not removed, this could lead to permanent rising dampness. Where there is any such risk the cavity should be inspected, removing an occasional brick, if necessary; any mud present should be raked or hosed out.

(b) DRYING. After cleaning, every opportunity should be taken for ventilating the structure, particularly in fine weather. Porous building materials will have absorbed large quantities of water during the flooding; 9-in. brickwork, for example, may have absorbed as much as 10 gallons for every square yard immersed in water. This water will take weeks or even months to dry out. If any salts appear on the surface of the brickwork or plasterwork, they should be brushed off dry—if more appear, it is a sign that the structure is still drying out.

The denser types of natural stone absorb very little water and will therefore dry more quickly, but if the masonry has an infilling of porous material and this has become saturated, the drying process will still take a long time.

All timber must be dried out to its pre-flooded condition as quickly as possible if the risk of decay by fungal growth is to be avoided. This applies particularly to the under-floor timbers of suspended timber ground floors. A dry appearance of the surface of floorboards may easily give a false idea of the condition of the concealed timbers.

It is not always appreciated that quite drastic measures may need to be taken to encourage drying if further damage and deterioration are to be minimised. The following list may be useful as a check:

(1) Keep windows and doors open as much as possible even when a fire is lit.

(2) Take up linoleum and carpets, dry and store them.

(3) Strip wallpaper and remove any wall panelling.

(4) Lift up floorboards here and there to increase the draught under the floor.

(5) Pay special attention to the under-floor ventilation of suspended timber floors, cleaning all ventilators and making improvements to the existing ventilation if necessary, to ensure that a good flow of air is obtained.

(6) Keep furniture away from walls and remove any pictures that are near the flooded parts of the walls; they slow down the rate of drying.

Effect of Water on Materials

The effect of water on different materials must be borne in mind when repairs are undertaken. Brickwork, plasterwork and timber will have absorbed varying amounts of water depending upon their porosity and the period of immersion; they also dry out at different rates. The consequences of incomplete drying are more serious with some materials than with others.

(a) BRICKS, STONE AND CONCRETE: Water is unlikely to have any serious effect on these materials. If the bricks originally contained any appreciable amounts of soluble salts, some of these salts may appear as an efflorescence on the surface.

Lightweight concrete that has a relatively high moisture movement may have expanded on wetting and so may shrink on drying; this may lead to a certain amount of cracking.

There is not likely to be much risk of frost attack of materials in the external walls since the flooded sections are not severely exposed, but dwarf free-standing boundary walls may suffer damage if they are still very wet when frost comes.

(b) WALL FINISHES: The condition of wall finishes will vary widely; some will be unharmed, others will be seriously affected.

Strong undercoats of cement and sand or cement, lime and sand are not likely to have suffered, but this may not apply to lime-sand or black ash mortars, particularly in old houses where they may already have been in need of replacement. Damage is likely to be greater in houses that have been flooded more than once.

Plasterwork based on calcium sulphate plasters may be soft whilst wet, but its condition on drying will be found to vary considerably; much of it will probably harden to its original state, but some may remain weak and in some instances the re-wetting may have caused a delayed expansion, with rippling and buckling of the plaster finish.

Plasterboard and fibreboard will be soft while wet, but may dry out without much warping or twisting; on ceilings, the boards may show some sagging.

Asbestos-cement sheeting is unlikely to have been harmed, but since it has been saturated it will be necessary when redecorating to proceed on the lines normally adopted for new asbestos cement.

(c) TIMBER: When wet, timber is in the right condition for attack by those fungi which cause decay. The longer it remains moist the greater is the risk that outbreaks of decay will develop. Thorough drying is essential. As already pointed out, the surface of the floorboards will look and feel dry long before the joists dry out.

Skirting boards, door frames, sills and joists ends and ground-floor timbers generally attached to, or embedded in, damp walls are in the most vulnerable positions and should be carefully examined.

While the timber is *wet*, cellar-rot *(Coniophora cerebella)* is more likely than dry rot *(Merulius lacrymans)*. If the measures already suggested for drying out have been taken, the risk of rot will be greatly reduced, but it is recommended that the underfloor be reinspected after six months and again in twelve months' time. Inspection of timber floors may reveal parts that have been suffering from decay for a long time, though not sufficiently extensive either to have caused structural failure or even to have been noticed before the floods gave occasion for detailed examination. Long-standing rot of this kind seen in some buildings has been found to be due to earth piled up against the walls above damp-proof course. The flooding may accentuate this unnoticed decay unless precautions are taken to eliminate its causes.

Signs of new outbreaks of decay are not likely to appear immediately and general experience shows that, unless a deliberate search is made, they may well not become noticeable within twelve months. Painted timber may have absorbed little, if any, water. Unless there are any obvious signs of defects such as warping of the timber and blistering of the paint, nothing need be done.

When the timber wetted by floods is again dry there will be no further risk of decay.

(d) FLOOR FINISHES: Apart from timber, permanent floor finishes are unlikely to have been affected. Timber, however, is likely to have swollen and this could have resulted in the buckling of floor boards and the lifting of wood blocks. Where water-sensitive adhesives have been used

to fix floor coverings to a concrete screed some loss of adhesion may have occurred. The possibility of re-using affected materials depends upon their condition when they have dried out.

(e) METALS: Metals are not likely to have suffered much damage unless the water was contaminated with salts. In factories where such contamination may have occurred, metal surfaces should be washed where accessible as a precaution against accelerated corrosion. Apart from this and any necessary attention to machinery, items such as locks and hinges should be oiled to prevent rusting.

Structural Damage

Any structural damage to buildings caused by severe buffeting by flood waters will be readily apparent. It is unlikely that buildings will have been damaged structurally simply as the result of being immersed. Long-term effects such as surface powdering and flaking or soft brickwork and corrosion of metals are not likely to occur unless the flood water contained a large proportion of sea-water.

(a) FOUNDATIONS: Experience with previous floods suggests that if no structural damage was done to foundations at the time of the flooding, foundation troubles are not likely to result specifically from the drying out of the flooded ground. The effects of scouring and erosion will usually be obvious and then, of course, remedial measures will be needed. Since, in these instances, the damage is not likely to be confined to the foundations it will be necessary to make a detailed inspection of the whole structure before deciding what measures shall be taken.

(b) WALLS: Structural damage by floods is similar in many respects to bomb damage; walls may be cracked, pushed out of vertical, or partially or wholly collapsed. Building Research Station Digest (Second series) 4, Repairing Brickwork, offers useful guidance for brick buildings. It is worth remembering, however, that the factor of safety of brickwork is so great that minor cracking can generally be neglected; this may save unnecessary demolition and repair.

(c) FLOORS AND ROOFS: In general, structural damage to floors and roofs will have occurred only when there has been serious damage to supporting structures or where there had already been signs of weakness. Concrete solid ground floors will have remained undamaged unless they were already seriously cracked or of weak construction. There is a possibility, however, of some long-term trouble where burnt colliery shale was used for the hardcore (See BRS Digest No. 97).

Renovation of Interiors

The redecoration of walls, with replastering where necessary, can follow the normal procedures, bearing in mind that if the work has to be carried out before the walls have thoroughly dried out the same precautions should be adopted as for new work. In particular, porous coatings, e.g., distempers, should be used since they will allow evaporation to continue. Wall-paper should not be applied too soon on damp walls.

The main problem in renovation will be concerned with timber—in particular, that in suspended ground floors. The importance of thorough drying to avoid decay by fungal growth cannot be too strongly emphasized.

It will seldom be practicable to remove door frames, window frames or cills and reliance must be placed on the drying operations to reduce the risk of fungal growth. Where, however, in the course of other repair work access is gained to the contact face of the timber (e.g., the back of skirting boards), it would be helpful to insert a damp-proof membrane such as bitumen felt between the timber and the wall so as to prevent further transmission of water. If there is not sufficient room for a piece of sheet material the contact face can be given two coats of an aluminium primer or a coat of non-odorous wood preservative of either the water-borne or organic solvent types. The latter should only be used if the wood is dry.

Timber panelling should have been removed from walls to allow the latter to dry out. It should be allowed to dry and should not be replaced until the walls also have dried since otherwise water in the form of vapour will be transferred from the walls to the back of the panelling and provide conditions favourable to fungal growth.

Panelled doors are unlikely to be affected unless the panels are made of plywood in which the plies are bonded with water-sensitive adhesives. On the other hand, flush doors may be more severely damaged and require replacement.

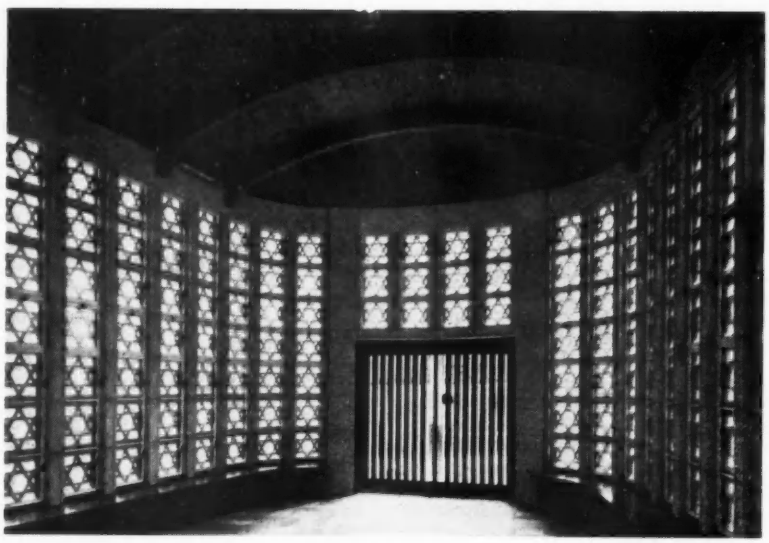
The Use of Flooded Stocks of Building Materials

Some builders and builders' merchants will have had stocks of building materials flooded, either on sites in course of development or in their own yards. Much of this material can be used provided certain elementary precautions are taken. Porous materials such as bricks, stone or tiles will have become saturated with water and will require at least a certain amount of drying out before being used. Those sensitive to frost attack should be temporarily covered in frosty weather.

Timber will have absorbed water to a depth depending on how long it has been immersed. Absorption will have occurred mostly at the exposed end grain and in sap wood. The timber must be open-piled and re-dried before use. Some sheet materials such as asbestos cement may be little affected, and can be separated and allowed to dry. Wet plasterboard and fibreboard may be too weakened to withstand handling to permit drying and much of it may be unusable. Plywood bonded with glues not resistant to water may also have been spoiled.

Glass stored in crates should be examined to find out whether there is a film of water trapped between the sheets. If there is, the sheets should be taken out of the case and dried before being restored. If the water is allowed to remain it may set up a chemical reaction causing a surface discoloration of the glass, and this is not easily removable. Other products packed in straw, such as sanitary goods, should also be examined and wet straw removed to prevent possible staining.

Metal sheets also should be separated and allowed to dry. Iron and steel goods should be dried as quickly as possible to prevent rusting.



The new main Chapel and Memorial Halls of Waltham Abbey Jewish Cemetery are of generally the same shape and similar construction, but the latter are of smaller size. The timber roofs were designed and supplied by Rainham Timber Engineering Co. Ltd. The roof of the main chapel consists of a quarter part of a hemispherical shell; laminated ribs support tongued and grooved boarding and a further laminated shell at each end of the roof. The underside of the ceilings are stained and polished. The architects were Lewis Solomon, Kaye and Partners, and the main contractors, W. & C. French Ltd.

Demolition Contracting

Form of Direct Contract

By a Contracts Correspondent

THE NATIONAL FEDERATION OF DEMOLITION CONTRACTORS has recently issued a Form of Direct Contract for use of its members when engaged directly by the site owner on a contract let separately from any subsequent building or construction work. Copies are available from the Federation at 20-21 Prince's-street, London, W1, price 2s. 3d.

This Form therefore can be reviewed objectively without reference to the standard forms of building contracts and subcontracts. Whilst the document is by no means one-sided, it is issued unilaterally and, unlike most building and civil engineering contracts, there is no architect or engineer nominated to act on behalf of the employer.

As a whole the document is reasonably clear in intent, but it behoves the parties to the contract to be fully aware of its conditions and implications. The following references to clauses in the Agreement and in the conditions may be pertinent:

The Agreement

Clause 2: provides for the sum to be paid for the contract work, as defined in Clause 1 and refers to 'additional' monies as shall become payable. This is a departure from the usual form of contract which normally refers to the contract sum 'or such other sums as shall become payable hereunder, etc.'

Clause 6 (1) provides for damage suffered by the employer in the event of non-completion by the contract date but no provision is made for payment of such 'quantified' sum by way of deduction or set off.

Clause 6 (2) provides for an agreed sum per diem payable to the contractor earlier than the contract completion date (including all proper extensions). In the event of some of the works being omitted it would appear that the employer is still liable to pay such early completion bonus, calculated from the contract completion date.

The Conditions

Clause 1 (b) provides for increases in any material rate in the Schedule of Daywork Charges. No provision is made for decreases thereof.

Clause 2 (c): Unless the employer can notify the contractor of the 'exact' location of all public service and other installations, then any damage thereto is the responsibility of the employer.

Clause 3 (c): Provision should be made whereby any delay for which the contractor considers himself entitled to an extension of time should be notified to the employer at the time such delay occurs.

Clause 4: This is an important clause dealing with variations, etc., and, linked with clause 2 of the Agreement gives the contractor the right to claim the whole of the contract sum whatever be the omissions of work which the employer may order. Whilst mention is made of additional time allowance for extra work, no mention is made of a reduced time allowance in the event of omissions of work.

Clause 8: An additional clause could with advantage be added to the effect that notwithstanding the employer's obligations, the contractor shall on his own responsibility and at his own expense make all arrangements and fulfil all requirements of local and other authorities appertaining to all transport to and from the site including waiting, loading and unloading.

Clause 9: If the site is to remain protected after completion of the contract, the employer must provide in the specification that temporary hoardings are the property of the employer and are left in position.

Damage by Trespass

Clause 10: If damage by trespass occurs, it remains a matter of act and fact whether or not the precautions taken by the contractor to prevent trespass have been reasonable.

Clause 11: The reference to accepted trade practices may imply the unhindered and unrestricted access over the highway. Hence the desirability of clarifying this issue by the addition to Clause 8 suggested above.

If delay is experienced in implementing the accepted trade practices and this involves additional cost, then the employer should be notified at the time of such delay.

Clause 14: Under this clause the contractor's responsibility is limited to making good damage to public footpaths. It does not cover possible damage to public roadways.

Clause 17: The prudent employer will ensure that all requisite protection of adjoining properties (including protection from weather of newly exposed walls) is adequately covered and fully described in the specification.

Clause 19: From this clause it is clear that in the event of determination by the employer due to default of the contractor, the employer cannot prevent the contractor from removing from the site his own plant, materials and equipment.

Clause 20: This is a permissive clause entitling the contractor to apply at monthly or longer intervals for payment (less 10 per cent retention) of the full amount set out in his statement of total value. No provision is made for certifying the correctness of such statement and it would appear that, except for arithmetical errors, the employer has no option (except recourse to arbitration) to accepting the statement rendered and making payment within fourteen days.

Release of Retention Monies

Clause 21: By this clause the employer must release all retention monies within fourteen days of notification by the contractor of completion of the work and must within seven days of receipt of the final account pay such balance as is shown thereon. No provision is made as to agreement of the account. No mention is made of a defects liability period or a retention therefor.

Clauses 22, 23 and 24: These clauses differ from common practice and place the onus of responsibility upon the employer, except in cases of negligence by the contractor or his agents. It is suggested that in these clauses reference should be made not only to 'negligence' but to 'negligence, omission or default.'

With particular regard to clause 22(c), specific works may be included in the contract dealing with protection of exposed party walls, in which case the clause in parenthesis would need to be amended or expunged.

The indemity required to be given the contractor by the employer in clause 23(b) is far reaching, and care should be taken by both parties to ensure that the several responsibilities are fully appreciated and also that satisfactory insurance cover is taken not only in regard to the liabilities specifically mentioned but also in regard to responsibilities to third parties and at common law.

Clause 25: In the event of determination of the employment of the contractor by the employer, provision should be made for the safety and security of the remaining works and adjoining properties, the removal of contractor's plant equipment, etc. (or lieu thereon) and procedure laid down enabling the employer to arrange, if he so desire, for the immediate resumption of work by another contractor.

Clause 26: In the event of determination of the employment of the contractor by the contractor, provision should be made for maintaining the safety and security of the remaining works and the adjoining properties.

It would appear that, unless clause 2 of the agreement be altered, the amount of loss or damage which could be claimed by the contractor under sub-clause (ii) (f) would not be less than the difference between the full contract sum and the value of the work done, however small.

Clause 28: Although there may be rare occasions when this clause is required to be implemented, it would seem prudent and expedient for both parties that a new up-to-date contract be executed.

National Schedules of Charges

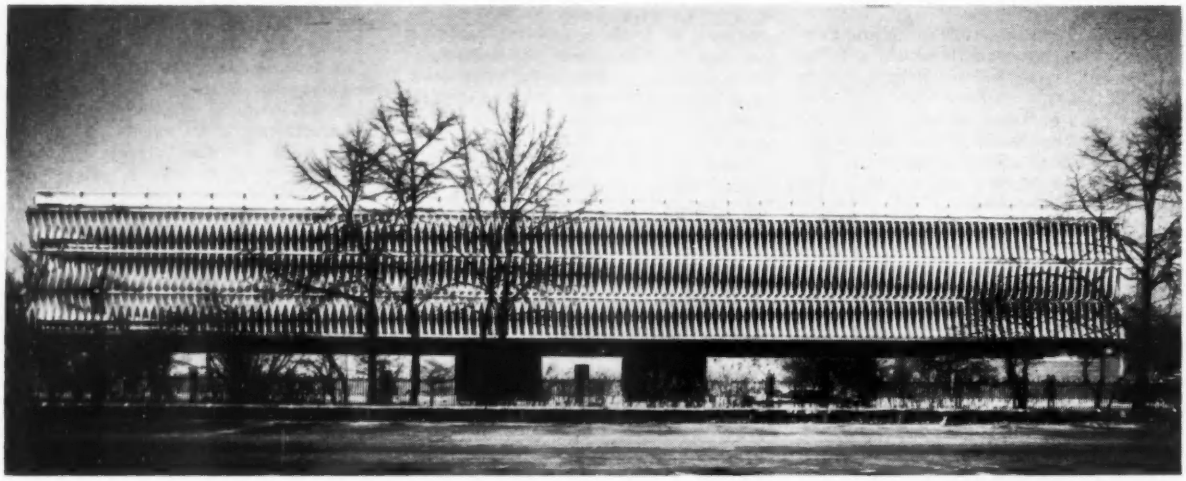
Also issued by the Federation are 'National Schedules of Charges for (a) Daywork Additions to Contract; (b) Daywork Contract; (c) Plant Hire' (price 2s.), and 'Constitution and Working Rule Agreement' (price 1s.).

Building Estimators' Examinations

THE INTERMEDIATE and final examinations of the Institute of Building Estimators will this year be held at the Royal Society of Health, 90 Buckingham Palace-road, London, SW1, from May 24 to 26. Applications to sit should be submitted to the Institute, at 10 Cromwell-place, London, SW7, by April 30.

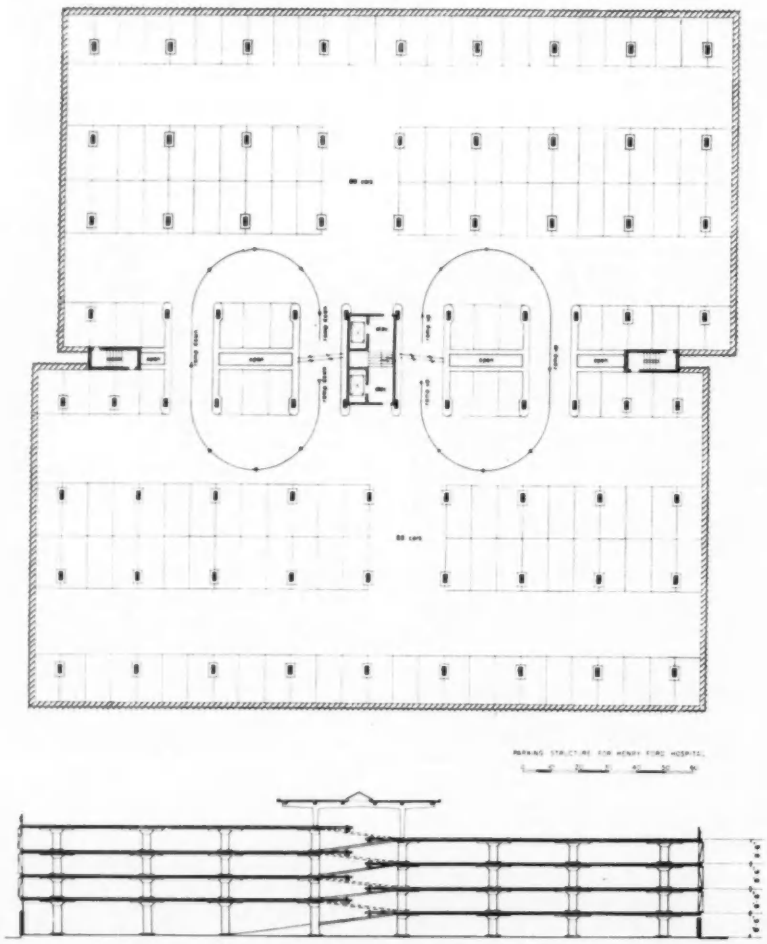
Multi-storey Garage, Detroit

Novel Use of Hyperbolic Paraboloidal Wall Panels



The Henry Ford Hospital garage—typical elevation

Below: typical floor plan and transverse section



THE HENRY FORD HOSPITAL garage in Detroit was completed early in 1960. Its architects, Albert Kahn Associated Architects and Engineers Inc., had been faced with the problem of designing a building which would harmonise with the existing hospital complex, and at the same time would not seem out of place in a predominantly residential area.

The four-storey garage, which houses 870 cars, is simply conceived but the treatment of the exterior is original and exciting without being startling. The novel effect is achieved by the use of hyperbolic paraboloidal precast concrete wall panels, which are the full height of each storey. Only the ground floor is screened by a red brick curtain wall. Seen from a moving car the aspect of the upper three storeys is continuously changing, by the variation of the angle from which the light is reflected.

The building, which provides nearly 300,000 sq. ft. of parking space, consists of two approximately equal split-level sections, connected by a set of four ramps. These are housed in the centre core, which also contains two hydraulic passenger lifts and three staircases. The entire building, constructed in seven months at a cost of 27s. per sq. ft., ranks as the lowest cost parking facility of its kind in the Detroit area.

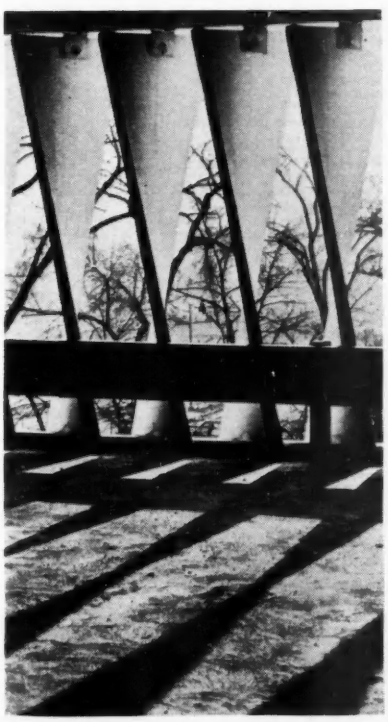
The precast panels of the exterior walls are of true hyperbolic paraboloidal shape. They are 7 ft. 4 in. high, 24 in. wide top and bottom and 18 in. wide in the middle. They vary in thickness from

2½ to 3½ in. and have a 90° twist. Forms for the casting of the panels were constructed of fibreglass mounted on steel angles and reinforced with steel pipes. The panels were subjected to a seven-day moisture cure after being removed from the forms. The concrete consisted of milky-white quartz, fine Ottawa sand for coarse and fine aggregate, and white cement. The whiteness of the panels creates a clean white appearance from the outside, and transmits daylight to the interior. A conventional brick curtain wall would have cost approximately the same amount without providing as interesting or attractive an appearance as the precast panels.

The designers felt that entry of natural light from all sides would prevent the claustrophobic effect found in a normal enclosed garage structure. The design of the garage is extremely pleasing, both for the user of the garage and for the passer-by. It is to be hoped that those who are responsible for designing garages in this country will attain a similar aesthetic and practical standard in their buildings.

The principal contractors were Darin and Armstrong Inc., and Truscon Laboratories were responsible for the precast concrete work.

Interior view showing hyperbolic paraboloidal panels



Electrical Floor Warming

Discussion on Techniques

PROBLEMS associated with the use of waterproof membranes in electric floor-warming systems were considered in a discussion sponsored by the Electrical Floor Warming Association, held at 21 Bloomsbury-street, London, WC, on February 8. The Association's chairman, Mr. R. F. Weaire, presided over a panel which comprised Mr. G. Waltzer (deputy chief chemist, Berry, Wiggins and Co. Ltd.), Mr. H. S. Halfnight (managing director, R. I. W. Protective Products Co. Ltd.), Mr. L. C. Bradshaw (technical director, Plycol Ltd.), Mr. J. Hurst (technical sales director, Tretol Ltd.), Mr. T. J. Harrison (Natural Asphalte Mine-Owners and Manufacturers Council), Mr. D. J. Pratt (British Visqueen Ltd.), and Mr. A. D. C. Burbridge (Marketing Department, National Coal Board).

Replying to the first question, MR. HARRISON said the presence of a floor-warming system on a solid slab in contact with the earth made a waterproof membrane absolutely essential. One might not, at the time of the construction, be dealing with the presence of water, but he firmly believed that by introducing water into the construction that was in contact with the earth they were going to introduce dampness.

Position of Membrane

Asked about the correct place for the membrane, MR. BRADSHAW said it should, at least, be two inches under the surface of the screed or possibly more. One could get away with less, but it was safe with two inches. It was a matter of getting a decent top screed.

MR. HALFNIGHT supplemented Mr. Bradshaw's views by quoting a letter from the Building Research Station when he raised the point with them. It was raised, he said, when water pipes were laid in almost the same manner. The letter stated that hot water pipes were usually, if not completely, buried in the concrete screed with at least ½ in. of concrete below. There appeared to be no problem there. Use of material other than concrete or a cement product on which to lay steel pipes was not advocated, this being an essential safeguard against corrosion. The disadvantage of laying a damp-proof membrane below the structural concrete slab was that all drying out must take place upwards.

If sufficient time could be allowed for this—and complete drying out of the thick slab might take a year or more—residual moisture would be driven upwards when heating started, and this might cause trouble. With the modern speed of building it was often better to have the membrane above the structural slab, but this might introduce the difficulty of the temperature of the heating element and also that of the thick screed.

Mr. Halfnight thought that temperatures up to 125° Fahrenheit were quite safe, but in cases of fluctuating temperatures in excess of this figure he advocated the covering of the membrane with one inch screed of a fairly weak dry mix on which the heating cables could be laid. Some people, he thought, objected to this on the grounds that it was expensive and unnecessary. The cables were merely laid on the membrane and he claimed the cables were firmly held in the top screed and it did not matter if the membrane did soften locally. As far as he knew the theory was that the introduction of heat on the top surface did not dry out moisture. Water found its way to the rising moisture and then it was encouraged to escape to the dry surface created by the floor-warming system.

'The Greatest Enemy'

MR. HURST said they took the point of view that where they had a metal cable, moisture was the greatest enemy. They had accepted the risk of very slight surface softening owing to the metal cable being directly on the membrane. The use of plastics-covered cables raised a very big doubt as to the possibility of plasticiser migration. There was a school of thought which said that pvc or any other type of plastics should not be in direct contact with bitumen. If the cable was warm there was, under certain conditions, a possibility of plasticiser migration, but he, personally, thought the risk was very small. With plastics-covered cables one was not worried about corrosion. He thought the membrane could usefully be put lower down in the floor construction although it was not a method he liked. He preferred the membrane as high up in the floor construction as possible.

It was pointed out that it was easy to get a horizontal membrane to function perfectly, and it was easy to get a vertical membrane to function reasonably well, but the headache was always at the junction of the horizontal and vertical. On the drawing-board it was perfect; it was two lines meeting on brick. The weakness was at the mortar joints.

A number of other questions were dealt with covering various aspects of the problem, and at the conclusion the chairman, in thanking the panel members, referred to the value of those who installed floor-warming systems being able to put their specific problems to those who supplied the membrane materials.

Building Science Conference

A ONE-DAY-CONFERENCE on 'Laboratory Techniques in Building Science' has been arranged at the Highbury Technical College, Anglesea-road, Portsmouth, by the Southern Regional Council for Further Education in conjunction with the City of Portsmouth Education Committee. The conference, for which the inclusive fee will be 21s., will be held on June 24, and will comprise three laboratory sessions in groups followed by an open forum before dispersal. Application forms may be obtained from the secretary of the Regional Council, at 22 The Forbury, Reading. The closing date is March 31.

Construction Work

Output in 1960 Highest Since War

AS BRIEFLY ANNOUNCED in 'The Builder' of March 3, contractors in Great Britain carried out constructional work to the value of £558m. during the fourth quarter of 1960, according to provisional figures collected by the Ministry of Works. This is the highest output recorded for any quarter since the end of the war. The figure was £7m. more than in the previous quarter and £49m. more than in the fourth quarter, 1959. Work done by contractors during the whole of 1960 amounted to £2,145m.; this also was a post-war record. £169m. more work was done than in 1959, or 8 per cent allowing for price changes.

During 1960, £629m. of work was done on housebuilding, £61m. more than in 1959: the whole of this increase was for private houses. The figure for the fourth quarter of last year showed little change compared to the previous quarter. The value of work done, other than housing, in the private sector also rose in 1960. For the year as a whole £592m. of work was carried out, £90m. more than in the previous year. Of the increase £59m. was for industrial building and £31m. for miscellaneous building; both sectors have shown a continued upward trend during the year and appear to be still rising.

There was a fall in the value of work other than housing carried out for public authorities during 1960 compared with the previous year, despite the expected increases in many programmes. Last year £432m. was carried out, £12m. less than in 1959. The value of repair and maintenance work was about 6 per cent higher in 1960 than in 1959, an increase of £30m., of which £19m. was for housing following the provisions in the 1958 Housing Act for improving housing accommodation.

In January this year 1,072,000 operatives were employed by contractors in the construction industries. With the exception of January, 1957, this is the highest figure recorded for January since the end of the war, and is 28,000 more than in January, 1960. The number of men employed in 1960 averaged about 20,000, or 2 per cent, more than in 1959.

The index of production rose by one point in the fourth quarter of last year compared with the third quarter and was 6 points higher than the fourth quarter of 1959. These figures reflect the increase in production and home deliveries of building materials. The production of bricks rose from 6,967m. in 1959 to 7,283m. in 1960, an increase of over 4 per cent. Production of cement rose from 12.6m. tons in 1959 to 13.3m. tons in 1960, an increase of over 5 per cent, while home deliveries rose by 712,000 tons or 6 per cent.

CONSTRUCTION IN GREAT BRITAIN

1. Value of Work (in £ million) Done by Contractors (at Current Prices)

	1959	1960		1959	1960
	Fourth Quarter	Third Quarter	Fourth Quarter	Total	Total
NEW HOUSING :					
For public authorities	62	60	61	245	242
For private developers	88	100	100	323	387
Housing Total	150	160	161	568	629
OTHER NEW WORK :					
For public authorities	108	111	111	444	432
For private developers—					
Industrial	72	89	93	282	341
Miscellaneous	59	63	68	220	251
Other New Work Total ...	239	263	272	946	1,024
TOTAL ALL NEW WORK	389	423	433	1,514	1,653
Repair and Maintenance ...	120	128	125	462	492
GRAND TOTAL	509	551	558	1,976	2,145

2. Operatives Employed (thousands) by Contractors*

	1960		1961
	January	October	January
New housing	281	291	283
Other new Work	431	464	459
Repair and maintenance	332	349	330
TOTAL	1,044	1,104	1,072

* Insured operatives aged 15 years and over, excluding administrative, technical and clerical workers and self-employed operatives.

3. Index of Construction Costs

The index numbers of the cost of new construction (1954=100) are as follows :

1959		1960		
Fourth Quarter	Average for year	Third Quarter	Fourth Quarter	Average for year
113	113	114	114	114

4. Index of Production

Changes in the volume of work done are shown in the official index of industrial production. The index numbers for construction (1954=100) are as follows :

1959		1960		
Fourth Quarter	Average for year	Third Quarter	Fourth Quarter	Average for year
115	111	120	121	118

Basic Materials

Varied Price Changes in January

EXCEPT FOR the small but continuing increase in the price index of all manufactured products, no uniform pattern of change is evident in the wholesale price indices for January. On average, prices of basic materials and fuel used in manufacturing industry were somewhat lower than in December, 1960. Materials and fuel used in the mechanical engineering industries show a 0.2 increase for January. The provisional figure for building and civil engineering materials for January at 148.8 shows an increase of 0.4 per cent over December, 1960. The house-building materials index showed a provisional increase of 0.5 per cent (1954 = 100).

Commodity	Jan., 1960	Dec., 1960	Jan., 1961
Coal	137·1	146·8*	147·0*
Slates	136·1	139·2	139·2
Refractory goods, including bricks	127·6	128·7	128·7*
Non-refractory goods, including bricks	113·2	120·1	121·5*
Building bricks, common, other than fletton, ex-works	116·5	121·0	123·5*
Building bricks, fletton common, delivered	105·2	117·5	117·5
Glass (other than containers)	121·5	121·6	122·8*
Cement, delivered	115·3	113·2	114·6
Cast stone and cast concrete products	102·4	103·3	130·3*
Synthetic resins and plastic materials	89·1	87·1	87·2*
Paint for building and decorating	108·7	108·2	108·1
Steel sheets	126·5	126·3	126·3
Aluminium and aluminium alloy products (extruded and drawn)	126·1	129·8	130·6
Galvanised cisterns, tanks and cylinders	122·1	126·9	126·9
Home-grown hardwood ...	96·2	95·4	95·4*
Wallpaper	119·8	123·5	123·5
Aluminium, virgin ingot, delivered	119·2	119·2	119·2
Copper, ex-ship, wharf or warehouse	104·4	92·9	88·5
Lead, ex-ship, wharf or warehouse	77·5	67·4	66·1
Zinc, ex-ship, wharf or warehouse	120·8	105·7	101·2
Imported hardwood, ex-yard or wharf	106·1	112·1	112·4*
Imported plywood (delivered to consumers)	95·2	98·9	99·5
Imported softwood (delivered to consumers)...	99·9	107·1	107·3

* Provisional.

THE BUILDER CURRENT PRICES

THE information given on these pages has been specially compiled for *The Builder* and is copyright. It is the intention that the details given should indicate fair average prices of materials, not necessarily the highest or the lowest. The prices apply to large quantities of materials loaded at works, delivered at London Stations or at site in London Area as stated. Prices for smaller quantities ex merchant's warehouse will necessarily be higher so as to include the stocking and handling costs involved. It is recommended that the prices of materials should be confirmed by inquiry from suppliers and merchants.

AGGREGATES AND SAND

Delivered site in full lorry loads. Average of prices for Boroughs of Westminster, Paddington, Holborn and St. Pancras.

		£	s.	d.
Pit Ballast	per yd.	1	5	5
Pit Sand	,,	1	3	8
Washed Sand	,,	1	6	9
¾ in. Shingle	,,	1	4	3
¼ in. Broken Brick	,,	1	0	9
Pan Breeze	,,	1	1	6
Fine or Coarse Foamed Slag Aggregate (2 yds. of fine and 2.6 yds. of coarse per ton.)	per ton	3	8	0

CEMENT, etc.

Including non-returnable jute sacks or paper bags.

		£	s.	d.
Best British Portland Cement. Standard Specification delivered Charing Cross area. 6-ton loads and upwards, site	per ton	5	12	0
1 to 6 tons, site	,,	6	4	0
Rapid-Hardening Cement in 6-ton loads and upwards to site	,,	6	2	6
1 to 6 tons do. site	,,	6	14	6
Aquacrete Water Repellent Cement. 32s. 6d. per ton on ordinary cement prices.				
Sulphate Resisting Cement. 32s. 6d. per ton on ordinary cement prices.				
Red, Buff or Khaki Colocrete in 6-ton lots	,,	8	12	0
Other colours according to colour. In 4-ton lots from 310s. 0d. to 780s. 0d. per ton.				
White Portland Cement	,,	13	17	6
Under 1 ton	per cwt.		16	11
417 Cement (Ultra Rapid Hardening) in 6-ton lots and upwards	per ton	7	4	6
Super Cement (Waterproof), 32s. 6d. per ton above Portland Cement.				
Cullamix Tyrolean Finish, £11 10s.0d. to £14 5s.0d. (1-ton loads and upwards).				
Ciment Fondu and Lightning Brands High Aluminous cement, 6-ton lots and up	,,	15	14	6
Stourbridge Fireclay, 6-ton loads at Railway Depot, London	,,	6	19	0
Stourbridge Fireclay, 6-ton loads (London sites)	,,	7	7	0
Moler Mortar Powder for Flue Bricks (London sites)	per cwt.	1	6	0

BRICKS

Full Loads		£	s.	d.
First Hard Stocks	per 1,000	16	19	6
Second Hard Stocks	,,	14	13	6
Mild Stocks (Kiln Burnt)	,,	10	15	0
Mild Stocks	,,	10	10	0
All loaded free into lorry at the works. The question of haulage is still very difficult and prices must be obtained from job to job.				
2½ in. Nominal Fletton Bricks to sites in W.C. district :				
Commons	,,	6	12	0
Cellular Commons	,,	6	12	0
Keyed do.	,,	6	14	0
Rustics	,,	8	12	0
Cellular Rustics	,,	8	12	0
Single Bullnose Commons	,,	8	14	6
Sandfaced	,,	9	12	0
Tuscans	,,	10	7	0
Saxons	,,	10	15	0
Golden Buffs	,,	11	2	0
Dapple Light Facings	,,	11	9	6
Heather Facings	,,	11	5	0
Best Blue Pressed Staffs (London sites)	,,	33	4	9
do. Bullnose (London sites)	,,	34	3	9
Blue Wire Cuts (London sites)	,,	29	9	6
Midhurst Lime Bricks (London sites)	,,	11	13	0
Uxbridge Whites (London sites)	,,	11	8	6
Special Purpose Sandlime Bricks (London sites)	,,	8	12	0
Best Stourbridge Fire Bricks :				
2½ in. (London stations)	,,	30	12	3
2½ in. (London sites)	,,	31	1	0
3 in. (London stations)	per 1,000	36	14	9
3 in. (London sites)	,,	37	5	3
2½ in. Moler Flue Bricks (London sites)	,,	31	0	0
2½ in. Machine-made Sandfaced Red Facings (London sites)	,,	18	16	6
2½ in. Machine-made Multi Red Facings (London sites)	,,	19	1	6
2½ in. Hand-made Sandfaced Red Facings (London sites)	,,	20	7	6
2½ in. Hand-made Sandfaced Multi-Colour Facings (London sites)	,,	20	7	6
Hand-made Sandfaced Cherry Red Facings, Berkshire district (London sites)	,,	21	5	0
Hand-made Sandfaced Multi-Colour Facings, Berkshire district (London sites)	,,	21	5	0
Rubber Bricks for gauged arches (London sites)	,,	52	5	0
2½ in. Surrey Clamp Burnt Multi Stock Facings (London sites)	,,	16	15	0
2½ in. Surrey Kiln Burnt Multi Stock Facings (London sites)	,,	17	7	0
Glazed Bricks (London sites), White, Ivory, Brown:				
Stretchers	,,	64	0	0
Headers	,,	63	0	0
Quoins, Bullnose and 4½ in. Flats	,,	80	0	0
Double Stretchers	,,	85	0	0
Double Headers	,,	77	10	0
One side and two ends	,,	87	0	0
Two sides and one end	,,	89	10	0
Splays and Squints	,,	83	0	0
Cream and Buff, £3 extra over White. Other colours, hard glaze, £8 10s. 0d. extra over White. All above prices plus 47½% for Best quality and plus 47½% less 10% for Second quality.				

PARTITION SLABS, etc.

Delivered Central London Area. (W.C. District.)

		£	s.	d.
HOLLOW CLAY PARTITION BLOCKS (Keyed) Minimum lorry loads				
*2½ in. 140 yds.	per yd. sup.		4	7
BUILDING BLOCKS (Keyed)				
*3 in. (6 cavity) 110 yds.	,,		5	9
*4 in. (6 cavity) 90 yds.	,,		7	3
6 in. (8¾ in. × 5¾ in.) 1,250 blocks	per 1,000	28	9	0
* Half blocks at no extra charge.				
CLINKER CONCRETE				
2 in. 100 yds.	per yd. sup.		3	11
2½ in. 85 yds.	,,		4	6
3 in. 75 yds.	,,		5	6
4 in. 55 yds.	,,		6	11
CRANHAM TERRA COTTA				
2 in.	,,		7	5
2½ in.	,,		8	4
3 in. Load bearing quality	,,		9	6
4 in. do. do	,,		11	6
MOLER PARTITION BLOCKS				
2 in. 150 yds.	,,		12	9
2½ in. 120 yds.	,,		13	9
3 in. 100 yds.	,,		14	9
4 in. 90 yds.	,,		17	0
LIGHTWEIGHT CONCRETE BUILDING AND PARTITION BLOCKS OF VARIOUS SOURCES OF MANUFACTURE				
2 in. 100 yds.	per yd. sup.		5	4
2½ in. 80 yds.	,,		6	5
3 in. 65 yds.	,,		7	5
4 in. 50 yds.	,,		9	4
4½ in. 44 yds.	,,		10	2
6 in. 33 yds.	,,		14	5
THERMALITE-YTONG PARTITION BLOCKS				
2½ in. 144 yds.	,,		7	0
THERMALITE-YTONG LOAD-BEARING INSULATING BLOCKS				
3 in. 120 yds.	per yd. sup.		8	5
4 in. 90 yds.	,,		11	0
5 in. 72 yds.	,,		13	9
6 in. 60 yds.	,,		16	6
8½ in. 42 yds.	,,	1	3	8
FLOOR BLOCKS AND FILLER TILES				
Floor Blocks 12 in. × 12 in. delivered in full lorry-loads :				
3 in.	per 1,000	35	14	0
4 in.	,,	38	9	0
5 in.	,,	46	1	0
6 in.	,,	52	12	0
7 in.	,,	64	12	0
8 in.	,,	75	9	0
9 in.	,,	83	2	0
10 in.	,,	92	0	0
Filler Tiles in multiples of 10 tiles per 1,000 multiples :				
12 in. × 3 in. × ½ in.	,,	43	13	0
12 in. × 4 in. × ½ in.	,,	75	7	0
10 in. × 5 in. × ½ in.	,,	75	7	0

STONEWARE DRAIN PIPES, etc.

Glazed Stoneware Standard List (November, 1956).

		4 in.	6 in.	9 in.
Pipes, 2 ft. lengths	per ft.	1/8	2/6	4/6
Bends	each	5/–	7/6	20/3
Junctions	„	8/4	12/6	27/–
Gullies with 4 in. outlets	„	12/6	13/9	22/6

The following are the percentages to be added to the Standard List (November, 1956) prices delivered London Area.

Delivered ex Merchants Wharf or Depot.

	Over 2 tons	Over 100 pieces Under 2 tons	Under 100 pieces Under 2 tons
	– 5%	+15%	+20%
Best Quality			
BSS Best Quality	+10 % – 5%	+10 %+15%	+10 %+ 20 %
Tested Quality	+37½% – 5%	+37½%+15%	+37½%+ 20 %
BSS Tested Quality	+47½% – 5%	+47½%+15%	+47½%+ 20 %

		£	s.	d.
3 in. Land Drain Pipes (in 12 in. lengths)	per 1,000	12	10	6
4 in. do. do.	„	16	16	0
6 in. do. do.	„	34	10	0
9 in. do. do.	„	64	19	0

DAMP COURSE

		£	s.	d.
Hessian base bitumen 7 lb. per yd. sup. in 24 ft. rolls cut to wall widths in lots of £6 value and over delivered London area	per yd. sup.		3	5
Asbestos base do. 7 lb. per yd. sup.	do. do. „		5	2
Lead lined bitumen do. 9½ lb. per yd. sup.	do. do. „		12	2
18 in. × 9 in. British damp course slates	per 1,000	43	8	11
14 in. × 9 in. do. do.	„	32	8	2
9 in. × 9 in. do. do.	„	18	18	9
18 in. × 4½ in. do. do.	„	19	19	9
14 in. × 4½ in. do. do.	„	15	18	3
9 in. × 4½ in. do. do.	„	10	14	3

STONE

		£	s.	d.
Bath Stone				
Monks Park	per ft. cube		10	3
St. Aldhelm Box Ground	„		11	6
Delivered in railway trucks at South Lambeth B.R. Western Region.				
Doulting Stone Random Blocks. Delivered London area	„		10	10
Beer Stone. Delivered London area	„		10	6
Portland Stone—				
Brown Whitbed in random blocks, 20 ft. average delivered in railway trucks at Nine Elms, B.R. Southern Region	„		9	10
Yorkshire Stone—Blue Robin Hood Quality. Delivered to site London in 6-ton lots.				
9 in. × 3 in. Rubbed, weathered, throated and stolled cills	per ft. cube	4	5	10
2 in. × 6 in. do. do. do.	„	3	1	2
12 in. × 3 in. Plain coping, twice throated	„	2	7	6
2 in × 3 in. Weathered and twice throated coping	„	3	3	3
4 in. × 6 in. do. do. do.	„	2	17	0
4½ in. × 9 in. Plinth rubbed on top and face	„	2	11	0
3 in. sawn two sides Slabs, random sizes	per ft. sup.		9	1
emplates and Cover Stones, 3 in., 4 in. and 6 in. thick, edges coped for rendered brickwork	per ft. cube	1	11	3
do. do. fair one edge for fair faced brickwork	„	1	17	0
Hard York—				
12 in. × 2 in. Square Steps, rubbed on top and edge	per ft. run		11	0
14 in. × 3 in. Round-nosed Steps, rubbed on top and front	per ft. cube	2	18	3
12 in. × 6 in. Plain Steps, rubbed top and front	„	2	11	0
2 in. Rubbed and Jointed Paving, given sizes	per ft. sup.		10	3
2 in. Sawn Paving, edges squared, in random sizes	per yd. sup.	3	12	0

TILES AND PANTILES

Delivered London area by road in 6 tons or over per 1,000.

	£	s.	d.
Machine-made Pantiles and French pattern Tiles from Lincolnshire district	35	16	6
Hand-made Pantiles Berkshire district	64	10	0
Hand-made Double Roman Bridgwater district	78	2	9
Hand-made 10½ × 6½ tiles Berkshire district	18	0	0
Machine-made 10½ × 6½ Staffordshire district	17	0	0
Hand-made Hip and Valley tiles per doz.	1	13	0
Machine-made Hip and Valley tiles do.	1	12	0
Concrete tiles 10½ × 6½	8	10	0
do. Interlocking (49S)	19	16	6

NOTE.—Breakage in transit, purchasers' responsibility.

SLATES

First-quality Slates from Penrhyn or Portmadoc, carriage paid in full truck loads to London Rate station. Per 1,000 actual.

	£	s.	d.
24 × 12	155	10	0
22 × 12	123	10	0
22 × 11	111	10	0
20 × 12	104	10	0
20 × 10	102	0	0
18 × 10	69	10	0
18 × 9	61	0	0
16 × 10	54	8	10
16 × 8	42	12	4

NOTE.—Breakage in transit, purchasers' responsibility.

TIMBER

		Ex			
Softwood			per		
Joinery quality		Wharf	standard	£115 to £140	
Carcassing quality		do.	„	£94 — £98	
1 in. Tongued and Grooved Flooring		do.	„	£110	0 0
Hardwood				£	s. d.
Mahogany—African S.E.		do.	per ft. cube	1	10 0
do. Honduras S.E.		do.	„	3	5 0
Oak European S.E.		do.	„	2	10 0
do. Japanese S.E.		do.	„	3	0 0
do. English Logs sawn		do.	„	2	0 0
Teak 8 in. average S.E.		do.	„	3	17 6
Walnut African Logs sawn		do.	„	1	2 6
Plywood			per		
6 mm. (¼ in.) Birch Plywood B/BB			100 sq. ft.	4	4 6
6 mm. Israeli Gaboon do. B/BB exterior grade WBP (AX100)			„	4	5 3
18 mm. Birch Blockboard			„	9	10 0
¾ in. Douglas Fir Plywood 96 in. × 48 in. Exterior grade WPB (AX100) solid two sides			„	9	11 0

DOORS (in Lots I-11)

Delivered London area.		£	s.	d.
1¾ in. 4 Horizontal Panel. Pattern 4 in. deal				
2 ft. 0 in. × 6 ft. 6 in.	each	1	16	0
2 ft. 3 in. × 6 ft. 6 in.	„	1	17	6
2 ft. 6 in. × 6 ft. 6 in.	„	1	18	6
2 ft. 9 in. × 6 ft. 6 in.	„	2	0	6
2 in. do. but top panel open. Pattern 4 × G in deal				
2 ft. 6 in. × 6 ft. 6 in.	„	2	9	0
2 ft. 9 in. × 6 ft. 6 in.	„	2	11	6
2 in. 2 Panel top panel open. Pattern 2 × G in deal				
2 ft. 6 in. × 6 ft. 6 in.	„	2	3	0
2 ft. 9 in. × 6 ft. 6 in.	„	2	5	0
1¾ in. Plywood Faced Flush Doors to BS459, Part 2A				
2 ft. 0 in. × 6 ft. 0 in.	„	1	12	3
2 ft. 0 in. × 6 ft. 6 in.	„	1	12	3
2 ft. 3 in. × 6 ft. 6 in.	„	1	13	9
2 ft. 6 in. × 6 ft. 6 in.	„	1	15	3
2 ft. 9 in. × 6 ft. 6 in.	„	1	18	0
1¾ in. Hardboard Faced Flush Doors				
2 ft. 0 in. × 6 ft. 0 in.	„	1	5	6
2 ft. 0 in. × 6 ft. 6 in.	„	1	6	0
2 ft. 3 in. × 6 ft. 6 in.	„	1	6	6
2 ft. 6 in. × 6 ft. 6 in.	„	1	8	6
2 ft. 9 in. × 6 ft. 6 in.	„	1	9	6

SUNDRIES

Delivered London area.		£	s.	d.
1 in. Wood Wool Slabs 6 ft. 0 in. × 2 ft. 0 in. in quantities of 1 ton (89 yds. to 1 ton)	per yd.		6	2
1¼ in. do. (67 yds. to 1 ton)	„		8	0
2 in. do. (52 yds. to 1 ton)	„		9	9½
2½ in. do. (45 yds. to 1 ton)	„		11	3
3 in. do. (39 yds. to 1 ton)	„		12	7½
Quantities under 1 ton add 1d. per ½ in. of thickness				
½ in. imported or home produced insulation Board, quantities over 5,000 sq. ft.	per 100 sq. ft.	2	2	6
⅛ in. Hardboard do.	„	1	17	6
⅛ in. do. do.	„	2	4	6
2 in. Compressed Straw Slabs, roofing quality. 6 ft., 8 ft., 9 ft., 10 ft., and 12 ft. × 4 ft.				
50–100 yds.	per yd. sup.		11	4
101–250 yds.	„		10	10
251–750 yds.	„		10	1
Over 750 yds.	„		9	4
2 in. do. for partitions 4d. per yd. cheaper.				
1/16 in. Asbestos Flat Building Sheets	„		4	3½
⅛ in. do. do.	„		6	0
Roofing Felt 1-ply	„		1	9
do. 2-ply	„		2	2½
Best Scotch Glue in slabs	per ½ cwt.	5	8	0
do. pearl	„	5	8	0
Croid Glue	28 lb.	2	6	0
Impact Adhesive	per gall.	2	12	0
Cut Nails 3 in. (1-ton lots)	per ton	81	10	0
do. 4 in. and up (1-ton lots)	„	78	0	0
Wire Nails 3 in. (4-cwt. lots)	per cwt.	3	19	2
do. 4 in. and up (4-cwt. lots)	„	3	16	6

METALS

STEEL JOISTS, ETC.

		£	s.	d.
Basis Joists—				
6 in. × 5 in., 8 in. × 5 in., 8 in. × 6 in., 10 in. × 6 in. 12 in. × 6 in., plain cut to lengths delivered London area	per ton	47	15	0
Extra for sizes				
3 in. × 1½ in. 4 in. × 1½ in.	„	3	10	0
3 in. × 3 in.	„	2	10	0
4 in. × 3 in.	„	2	5	0
10 in. × 4½ in.	„	1	10	0
5 in. × 2½ in. 5 in. × 3 in.	„	1	15	0
4½ in. × 1¾ in.	„	3	5	0
5 in. × 4½ in. 7 in. × 3½ in. 13 in. × 5 in.	„		15	0
6 in. × 3 in. 24 in. × 7½ in.	„	2	0	0
6 in. × 4½ in. 7 in. × 4 in. 8 in. × 4 in.	„	1	5	0
9 in. × 4 in. 10 in. × 5 in.				
12 in. × 5 in. 22 in. × 7 in.	„	1	0	0

METALS—*continued*

		£	s.	d.
9 in.×7 in. 10 in.×8 in. 12 in.×8 in. / 14 in.×5½ in. 14 in.×6 in. 14 in.×8 in. / 15 in.×5 in. 15 in.×6 in. 16 in.×6 in.	per ton		10	0
16 in.×8 in. 18 in.×6 in. 18 in.×7 in. / 18 in.×8 in. 20 in.×6½ in. 20 in.×7½ in.	,,		10	0
Steel angles average price	,,	48	15	0
Steel tees average price	,,	49	15	0
Fabricated work delivered London—				
R.S. Joists cut and fitted...	,,	67	19	9
Compound girders...	,,	72	14	3
Stanchions	,,	78	9	9
Compound stanchions	,,	83	4	3
In Roof Work—Trusses and Purlins	,,	93	19	6
Average prices not for awkward work.				
Angle cleats and ⅝ in., ¾ in. and ⅞ in. bolts average price London area	per cwt.	5	10	0

Ferro-Concrete Bars and Fabric

Mild Steel Ferro-Concrete Bars British manufacture to BSS 785 ex. Mills. 1 in. diameter and upwards delivered nearest London station ... per ton 40 10 0
do. do. ex. London Stock do.
delivered London site ... ... ,, 49 10 0

Extras—

½ in. diam....	per ton extra	8	12	6
⅜ in. do.	,,	6	12	6
⅝ in. do.	,,	4	12	6
¾ in. do.	,,	3	2	6
⅞ in. do.	,,	1	10	0
⅞ in. and ¾ in. diam.	,,		15	0

Steel wire mesh reinforcing fabric to BSS 1221A.

Ref. No. 106	7.88 lbs.	per sq. yd.	5	1¾
,, ,, 109	4.71 ,, ...	,,	3	0½
,, ,, 113	1.83 ,, ...	,,	1	8¼
,, ,, 122	7.32 ,, ...	,,	4	9½
,, ,, 125	4.32 ,, ...	,,	2	10

Mild Steel Tubes

Tubes to BSS 1387. Fittings BSS 1740.

Basic List Prices

	¼ in.	⅜ in.	½ in.	¾ in.	1 in.	1¼ in.	1½ in.	2 in.
Tubes ... ... per ft.	9¾	10	1/–	1/2½	1/9	2/3	2/8	2/9
Bends ... ... each	1/7	1/9	2/–	2/6	3/8	5/5	6/2	10/7
Elbows, square ,,	1/8	1/10	2/2	2/6	3/–	4/4	5/2	8/6
do. round... ,,	1/10	2/–	2/4	2/10	3/4	4/8	5/8	9/4
Tees ... ... ,,	2/–	2/2	2/6	3/2	3/8	5/–	6/2	10/2
Crosses... ... ,,	4/4	4/8	5/6	6/6	8/2	11/–	13/2	21/–
Sockets, Plain ,,	6	6	8	10	1/–	1/4	1/9	2/6
do. Diminished ,,	8	10	1/–	1/2	1/6	2/–	2/8	4/–
Backnuts ... ,,	4	4	6	7	10	1/–	1/4	2/2

Malleable Fittings

	¼ in.	⅜ in.	½ in.	¾ in.	1 in.	1¼ in.	1½ in.	2 in.
Elbows, round each	8½	8½	9½	1/2½	1/8½	2/7½	3/6	5/–
Tees ... ... ,,	9½	9½	1/–	1/4¾	2/–	2/9½	4/–	5/6
Crosses... ... ,,	1/2½	1/2½	1/4¾	2/–	2/9½	3/7½	5/2½	7/2½
Sockets... ... ,,	5¾	5¾	7	9½	1/–	1/7½	2/2½	3/1½
Backnuts ... ,,	3	3	3¼	4½	5¾	7¾	10½	1/5¼

Discounts from List prices as follows :—

Galvanised Tube—

	Under 1 ton	Over 1 ton	W.I. Fittings	Malleable Fittings
Light	−38½%	−40 %	Light −25½%	Malleable List
Medium	−34½%	−36 %	Heavy −21½%	−18¼%+40%
Heavy	−26½%	−28¼%		
Black—				
Light	−49 %	−50½%	Light −31½%	Malleable List
Medium	−45 %	−46½%	Heavy −27½%	−18¼%
Heavy	−37¼%	−39 %		

C.I. Half-Round Gutters

Delivered London per yd. in 6 ft. lengths.

	Gutters	Nozzles	Stop Ends
3 in.	4/2½	3/9	1/1
3½ in.	4/7	4/1	1/1
4 in.	5/11	4/7	1/7
4½ in.	6/6	5/1	1/11
5 in.	7/3	5/6	2/3

C.I.O.G. Gutters

Per yd. in 6-ft. lengths :

	Gutters	Nozzles	Stop Ends
3 in.	5/5	4/11	1/3
3½ in.	6/–½	4/11	1/7
4 in.	6/8½	5/1	1/11
4½ in.	7/3	5/10	2/3
5 in.	7/11	6/8	2/7

C.I. Rain-Water Pipes

	Pipe	Bends	Branches
2 in.	8/11½	4/7	6/7
2½ in.	8/11½	5/1	8/10
3 in.	10/1	6/5	9/7
3½ in.	11/6	7/7	11/6
4 in.	13/3½	9/2	13/7

L.C.C. Coated Soil Pipes

2 in.	10/2½	7/10	9/7
2½ in.	10/9	8/9	11/11
3 in.	12/1	9/7	14/2
3½ in.	13/6	11/11	16/6
4 in.	15/4½	13/4	19/5

Above prices for gutters, rain-water and soil pipes for under 5-cwt. lots only. Lots over 5 cwt. see List No. 3300, dated February 1, 1955, plus 27½% and tonnage allowance. 4-ton lots 5%, 2-ton lots 2½%.

L.C.C. Coated Drain Pipes

	£	s.	d.
4 in. diameter in 9 ft. lengths ... ... per yd. run	1	11	1
6 in. do. do. ... ... ,,	2	5	6
4 in. diameter bends ... ... each		19	9
6 in. do. do. ... ... ,,	2	12	8
4 in. diameter branches ... ... ,,	1	15	1
6 in. do. do. ... ... ,,	4	4	2

above prices for any quantity but under 5 cwt. carriage extra.

Pitch Fibre Drain Pipes

2 in. diameter in 5 ft., 5 ft. 6 in. or 8 ft. lengths including couplings ... ... per ft. run		1	6½
3 in. do. ... ... ,,		1	10½
4 in. do. ... ... ,,		2	6
5 in. do. ... ... ,,		4	1¾
6 in. do. ... ... ,,		5	0¾
4 in. diameter short radius ¼ bends ... ... each		17	9
4 in. do. do. ⅛ bends ... ... ,,		12	11
2 in. diameter 6 ft. radius bends (5 ft. lengths) ,,		16	2
3 in. do. do. do. ,,		19	8
4 in. do. do. do. ,,	1	7	4
5 in. do. do. do. ,,	2	4	0
6 in. do. do. do. ,,	2	14	6

Above prices for loads of £60 and over.
Loads £25 to £59 19s. 11d. Plus 10%
Loads under £25 ... Plus 15%

Asbestos Rain-Water Pipes and Fittings

All less 17½% discount.

	2 in.	2½ in.	3 in.	4 in.
Pipes, 6 ft. lengths ... per yd.	4/7	4/10½	5/11	7/10
Shoes ... ... each	3/–	3/3	3/10	5/2
Single Branches ... ... ,,	4/8	5/6	6/7	9/2
Bends, square or obtuse ... ,,	3/3	3/7	4/8	6/7
Swan Necks, 4½ in. proj. ... ,,	3/7	4/8	5/2	7/3
do. 6 in. do. ... ,,	3/10	5/2	5/10	7/10

Asbestos O.G. Gutters and Fittings

	4 in.	4½ in.	5 in.	6 in.
Gutters, 6 ft. lengths ... per yd.	4/4	4/9½	5/9	6/10½
Drop ends ... ... each	3/6	4/–	4/9	5/5
Stop ends ... ... ,,	1/1	1/2	1/3	1/5
Angles ... ... ,,	3/7	4/1	5/–	5/10
Nozzles ... ... ,,	3/6	4/–	4/9	5/–
Union Clips ... ... ,,	1/9	2/1	2/6	2/11

Asbestos Half-Round Gutters and Fittings

	per	3 in.	4 in.	4½ in.	5 in.	6 in.
Gutters, 6 ft. lengths	yd.	3/0½	3/7½	3/8½	4/4½	6/1
Drop ends	each	2/6	3/–	3/3	3/7	5/2
Stop ends	,,	1/–	1/1	1/2	1/3	1/5
Angles	,,	2/10	3/3	3/7	3/10	5/2
Nozzles	,,	2/6	3/–	3/3	3/7	5/2
Union Clips	,,	1/3	1/4	1/5	1/7	2/5

	Per ton basis in London £	s.	d.
Iron—Staffordshire Crown Merchant Quality	52	17	6
Mild Steel Bars	47	8	6
Mild Steel Hoops	49	0	0

	Ex Merchant's Stock per ton Two-ton lots £	s.	d.
Soft Sheets C.R. and C.A.—			
20 gauge	62	7	6
24 gauge	64	17	6
26 gauge	67	17	6
Galvanised Corrugated Sheets, 6 ft. to 9 ft.—			
20 gauge	70	18	0
24 gauge	74	8	0
26 gauge	79	13	0
Galvanised Flat Sheets C.R. and C.A.—			
20 gauge	72	8	0
24 gauge	75	18	0
26 gauge	81	3	0

ALUMINIUM AND ALUMINIUM ALLOYS

(Base Prices)		£	s.	d.
Sheet BS 1740 S1C 18 SWG (36 in. wide)... ...	per lb.		3	0½
Sheet BS 1470 NS3 Utility 18 SWG (36 in. wide)	,,		2	11
Coiled strip BS 1470 S1C 18 SWG (24 in. wide)	,,		2	11
Coiled strip BS 1470 NS3 Utility 18 SWG (24 in. wide)...	,,		2	11
Coiled strip high purity, 22 SWG (12 in. wide)	,,		3	2
Corrugated sheet BS 1470 NS3 Circular Profile 8 ft.×32 in.×20 SWG	per sheet	1	14	1
Corrugated sheet BS 1470 NS3 Industrial Profile 8 ft.×31¾ in.×20 SWG	,,	1	19	10
Corrugated sheet BS 1470 NS3 Mansard Profile 8 ft.×31¾ in.×20 SWG	,,	1	13	1
Extruded section BS 1476 E1C simple moulding	per lb.		2	10½
Extruded section BS 1476 E1C 1 in. diam. round	,,		2	8
Extruded section BS 1476 HE19WP simple angle	,,		3	2
Extruded section BS 1476 HE19WP 1 in. diam. round	,,		3	1
Tubing BS 1471 T1C 1½ in. O/D×20 SWG ...	,,		4	8
Tubing BS 1471 HT19WP 1½ in. O/D×20 SWG	,,		6	3

PLUMBERS' BRASS WORK, etc.

Delivered in London area.

All per dozen	B.S.S. ½ in.	¾ in.	1 in.	1¼ in.	1½ in.	2 in.
Screwdown bib cocks Crutch head for iron...	87/–	128/–	—	—	—	—
Toilet bib cocks for iron ...	109/–	158/5	—	—	—	—

PLUMBERS' BRASS WORK, etc.—*continued*

All per dozen	½ in.	¾ in.	1 in.	1¼ in.	1½ in.	2 in.
Screwdown stop cocks for iron	66/–	95/9	188/–	363/–	522/6	917/6
do. with two unions for lead	89/–	132/–	234/4	472/–	623/6	1,389/6
Double nut boiler screws ...	18/8	26/5	47/6	48/6	67/–	93/6
Heavy Croydon ball valves ...	77/–	193/6	312/5	568/8	734/10	—
Plumbers' union brass lead to iron	19/6	23/6	38/6	52/10	70/6	165/–
	1¼ in.	1½ in.	2 in.	3 in.	3½ in.	4 in.
Caps and Screws	33/–	40/8	59/6	92/5	118/10	155/3
Brass Sleeves	—	31/11	31/11	56/2	74/10	91/5
	1½×6 lb.		1½×6 lb.	2×7 lb.		3×7 lb.
Lead P. trap with brass cleaning screws	68/6		85/6	137/–		233/9
Lead S. trap do. do.	82/9		102/9	168/3		302/3

Solder :

			s.	d.
Plumbers' ...	1 cwt. lots	320/–	14 lb. lots per lb.	3	7
Tinmen's	,, ,,	404/–	,, ,, ,,	4	5
Blow pipe ...	,, ,,	407/–	,, ,, ,,	4	6

Copper Tubes and Sheets

Copper tubes BSS 659/1944 on the basic price of 26½d. per lb. plus gauge and manufacturing extras as follows. Minimum quantities, 10 cwt.

	Extra d.	Total per lb. d.	Approx. per ft. d.
¼ in.×19 gauge	16½	42½	11½
⅜ in.×19 ,,	14½	40½	16
1 in.×18 ,,	12½	39⅜	24½
1¼ in.×18 ,,	12½	38⅜	29½
1½ in.×18 ,,	12½	38⅜	35¼
2 in.×17 ,,	13⅜	40⅜	56½

Small Quantity extras :

10 cwts. to 5 cwts.	plus ½d. per lb.
5 cwts. to 2 cwts.	,, 1d. ,,
2 cwts. to 1 cwt.	,, 2d. ,,

Rolled Copper sheets up to 48 in. wide, basic price plus gauge and manufacturing extras ... ... £ 260 s. 0 d. 0

Zinc

		£	s.	d.
Sheet Zinc, 10 gauge (25 SWG),	5 cwt. lots upwards per cwt.	7	15	3
,, ,, 12 gauge (23 SWG),	,, ,, ,, ,,	7	14	9
,, ,, 14 gauge (21 SWG),	,, ,, ,, ,,	7	13	6

Brass Tube

		£	s.	d.
Brass tubes, basic price, plus gauge and manufacturing extras	per lb.		1	10½

LEAD SHEET AND PIPES

Basis selling price to one address in London or Home Counties :

		£	s.	d.
Lead Sheet, English, 3½ lb. substance and upwards	per ton	104	15	0
,, Water Pipe, in coils	,,	107	0	0
Lead Soil Pipe, 10 ft. or over 2 in. to 4 in. in dia.	,,	108	10	0
,, ,, ,, over 4 in. dia.	,,	110	10	0
,, Gas or Untinned Compo pipe	,,	108	10	0

5 cwt. lots and over less 6d. per cwt. off basic prices.

Extras over Basis for quantities under 5 cwt. :

3 cwt. and under 5 cwt.	per cwt.	4	0
1 cwt. do. 3 cwt.	,,	6	0

Smaller quantities than 1 cwt. priced specially.

Supplying sheet lead and lead pipes to less than basis weights and cutting to sizes less than basis charged extra according to current trade schedule.

Allowance for Old Lead, collected, £59 0s. 0d. per ton weighed at buyer's works.

PLASTER, etc.

		£	s.	d.
Coarse Pink in 1-ton loads and over delivered on site	per ton	8	8	3
do. White do. do. do.	,,	8	17	9
Sirapite Coarse BSS 1191 Class C do.	,,	8	19	9
do. Fine do. do. do.	,,	9	7	6
do. Browning BSS 1191 Class B do.	,,	8	19	9
do. Board Finish do. do.	,,	8	19	9
Blue Lias Lime, in 6-ton loads	,,	6	14	6
Hydrated Lime (Grey) in 6-ton loads	,,	5	10	0
do. (White) do.	,,	6	0	0
Lump Lime (Grey) do.	,,	5	7	0
do. (White) do.	,,	5	14	6
White Keen's or Parian Cement, in 1-ton loads ...	,,	12	4	9
Pink Keen's or Parian Cement, in 1-ton loads ...	,,	11	19	6
Granite Chips, in 6-ton loads	,,	2	5	3
Hair	per cwt.	4	17	6
Gypsum Plaster Lath or Base Board, ⅜ in. thick, 600 yds. and over in one delivery. Delivered site	per yd.		2	2½
1,200 yds.	,,		2	1½
do. Insulating do. ½ in. thick, 600 yds. and over in one delivery. Delivered site	,,		2	8
1,200 yds.	,,		2	7
Gypsum Plaster Wall Boards, 3 and 4 ft. wide 6 to 12 ft., ⅜ in. thick, 600 yds. and over in one delivery. Delivered site	,,		2	5½
1,200 yds.	,,		2	4½
do. Insulating do. ½ in. thick, 600 yds. and over in one delivery. Delivered site	,,		2	11
1,200 yds.	,,		2	10

PAINTS AND DISTEMPER

Delivered London area.

		£	s.	d.
Ceiling Distemper	per cwt.	1	7	6
Washable Distemper	,,	5	15	0
Gloss Paint	per gal.	2	16	0
Super Snowcem cement paint (in 1 cwt. drums) ...	per cwt.	5	0	0

Lead Products and Oils

		£	s.	d.
Ground White Lead, in 1 cwt. kegs	per cwt.	8	7	6
Genuine White Lead Paint, 1-19 gal. lots in 1 gal. tins	per gal.	3	6	6
Genuine Red Lead, Dry, 1 cwt. keg (10 ton lots)	per cwt.	5	12	6
do. do. do. (1 cwt. lots)	,,	6	19	0
Genuine Linseed Oil Putty, 1 cwt. keg	,,	2	13	6
Size XD quality 28 lb.	per tin		9	0
Raw Linseed Oil (5 gal.) drums extra	per gal.		19	2
Boiled Linseed Oil (5 gal.) do.	,,	1	0	0

Sundries

Turpentine substitute (5 gal.) drums extra ...	,,		5	4½
do. do. (40 gal.) do.	,,		4	8½
Solignum, Brown (5 gal. cans) Exterior	,,		8	8
Creosote (40 gal. barrels)	,,		2	3
Paste Powder (1 lb. packets)	per lb.		2	4
White Lining Paper	per piece		1	2

VARNISHES, etc.

Delivered London area.

		£	s,	d.
Oak Varnish, Outside or Inside	per gal.	2	0	0
Oak, Pale Copal do. do.	,,	2	0	0
Hard Drying Oak for Inside	,,	2	5	0
Crystal Paper Varnish do.	,,	2	8	0
Eggshell Flat Varnish do.	,,	2	2	0
Finest Carriage Varnish	,,	2	7	0
Front Door Varnish	,,	2	4	0
Japan Gold Size	,,	1	12	0
Black Japan	,,	1	16	0
Brunswick Black	,,	1	12	0
Berlin Black	,,	1	10	0
Terebene	,,	1	12	0
Knotting (1 gal. bottles free)	,,	1	15	0
French and Brush Polish (do.)	,,	1	15	0

GLASS

Delivered London area.

		s.	d.
18 oz. Sheet Glass Ordinary Glazing Quality—Cut Sizes ... ... per ft. sup.			10
24 oz. do. do. do. do.	,,	1	0½
26 oz. do. do. do. do.	,,	1	3
32 oz. do. do. do. do.	,,	1	7½
⅛ in. Rolled Plate	,,	1	3½
7/32 in. Rolled and Rough Cast	,,	1	6½
¼ in. do. do.	,,	1	7½
⅛ in. Figured Rolled and Cathedral, Standard patterns—			
White Group 1	,,	1	3½
do. Group 2	,,	1	9½
do. Standard Tints	,,	2	1½
do. Special Tints	,,	7	3
⅛ in. Pinstripe, Hammerstripe, Reeded, Reedlyte and Luminating Group 3	,,	1	8½
¼ in. Wired Cast	,,	1	10½
¼ in. Georgian Wired Cast	,,	1	11

Hollow Glass Blocks—

P.B.2	Cross reeded	5¾×5¾×3⅞ in.	each	3	9
P.B.3	Broad reeded	7¾×7¾×3⅞ in.	,,	5	9
P.B.32	Cross reeded	7¾×7¾×3⅞ in.	,,	5	9
P.B.4	Prismatic	7¾×7¾×3⅞ in.	,,	6	6
P.B.5	Flemish	7¾×7¾×3⅞ in.	,,	5	9
P.B.6	Boomerang	7¾×7¾×3⅞ in.	,,	6	6

Half Size Blocks—

P.B.32	Cross reeded	7¾×3¾×3⅞ in.	,,	4	10

Radiused Corner Blocks to match up with—

P.B.2	Cross reeded	,,	8	1
P.B.3	Broad reeded	,,	9	8
P.B.32	Cross reeded	,,	9	8

P.B.2, P.B.3, P.B.32 are also supplied in Light Diffusing Blocks at same price.

¼ in. Polished Plate Glass, G.G. quality—				
In plates not exceeding	2 ft. sup.	per ft. sup.	4	7
,, ,, ,,	5 ft. sup.	,,	5	7
,, ,, ,,	45 ft. sup.	,,	7	6
,, ,, ,,	100 ft. sup.	,,	7	6
¼ in. Polished Plate, extra sizes, *i.e.*, plates exceeding 100 ft. sup. or 160 in. one way or 96 in. both ways. G.G. quality—Not exceeding 135 ft. sup. or 240 in. one way or 130 in. both ways ...		,,	11	4
Not exceeding 180 ft. sup. or do.		,,	15	0

Plates exceeding 180 ft. sup. prices on application.

Substances other than ¼ in. Polished Plate at Special Prices.

Quantity Tariff—Sheet and Sundry Glass.

The following prices apply to minimum quantities of one size and one pattern delivered by the manufacturer to one site at one time.

Description of Glass—	Minimum quantity	per ft. sup. s.	d.
18 oz. sheet O.Q.	3,000		7½
24 oz. ,, ,, ...	2,000		9½
26 oz. ,, ,, ...	2,000		11½
32 oz. ,, ,, ...	2,000	1	3½
⅛ in. Rolled Plate	1,000		10½
¼ in. Figured Rolled and Cathedral Standard Patterns, White Group 1	1,000		10½
do. Group 2	1,000	1	2½
⅛ in. Pinstripe, Hammerstripe, Reeded, Luminating and Spotlyte Group 3	1,000	1	2½
7/32 in. Rolled Plate or Rough Cast	2,000	1	2
¼ in. do. do.	2,000	1	2½
¼ in. Wired Cast, Hexagonal	2,000	1	5
¼ in. Georgian Wired Cast	2,000	1	5½

THE BUILDER RATES OF WAGES

AS FROM FEBRUARY 6th., 1961. (Every endeavour is made to ensure accuracy but we cannot be responsible for errors)

1. Craftsmen and Labourers.

Region	Craftsmen	Labourers
	s. d.	s. d.
England & Wales (Grade A) ...	5 0	4 4½
London	5 1½	4 6
Liverpool and District ...	5 1½	4 6
Scotland... ...	5 0	4 4½

2. Apprentices.

Age	Per cent. of Craft Rate	London and Liverpool Dist.	England, Wales
		s. d.	s. d.
15	25	1 3½	1 3
16	33½	1 8½	1 8
17	50	2 6½	2 6
18	62½	3 2½	3 1½
19	75	3 10½	3 9
20	87½	4 6	4 4½

3. Young Male Labourers.

Age	Per cent. of Craft Rate	London and Liverpool Dist.	England, Wales and Scotland
		s. d.	s. d.
15	33½	1 6	1 5½
16	45	2 0½	1 11½
17	66⅔	3 0	2 11
18	100	4 6	4 4½

NORTHERN IRELAND is not included; rates fluctuate so much from district to district that reference should be made to local offices.
WATCHMEN.—The rates per shift for watchmen engaged on building sites is 27s. 6d. in London and Liverpool District, and 26s. 3d. in the provinces.
FEMALE OPERATIVES.—In all districts throughout the country except in Scotland the rate of wages for women, aged 19 and over, engaged in craft processes is 4s. 1½d. per hour. Women engaged on work other than craft processes, 3s. 9½d. per hour. In Scotland the rate for the woman craftsman is 4s. 4½d. after a probationary period, and the woman labourer, 3s. 10½d.

New Companies

THE FOLLOWING NEW COMPANIES, registered in England, have been announced by Jordan and Sons, Ltd., company registration agents.

D. GASKELL LTD.—Regd. Jan. 17, 1961. 351 Derby-st., Bolton. Secy.: G. Gaskell. Bldrs., etc. Nom. cap.: £1,000.

PRESTBURY CONSTRUCTION CO. LTD.—Regd. Jan. 17, 1961. Linden Cottage, The Burbage, Prestbury, nr. Cheltenham. Secy.: Kathleen R. Hayward. Bldrs., etc. Nom. cap.: £500.

ROBINS & HAGUE LTD.—Regd. Jan. 17, 1961. Bldrs., etc. Nom. cap.: £3,000. Dir.: Charles G. Robins, 31 Grovewood-close, Chorley Wood, Herts.

TREACY, WELLER & O'KEEFFE LTD.—Regd. Jan. 18, 1961. 10 Bulmersche-rd., Reading, Berks. Secy.: Shirley Hart. Bldrs., etc. Nom. cap.: £100.

DORIAN GILL LTD.—Regd. Jan. 18, 1961. 12 Alderley-rd., Wilmslow. Secy.: Doreen S. Barclay. Bldrs., pntrs., etc. Nom. cap.: £1,000.

RENDELLS (BUILDERS) LTD.—Regd. Jan. 18, 1961. Trebor Farm, Robertsbridge, Sussex. Secy.: Joan M. Rendell. Nom. cap.: £200.

HALFACRE & YOUNG LTD.—Regd. Jan. 19, 1961. Holyport-rd., Maidenhead. Secy.: J. S. Dodwell. Bldrs. and contrs., etc. Nom. cap.: £25,000.

BLISS & CO. (BUILDERS) LTD.—Regd. Jan. 19, 1961. 22-24 Sidney-st., Cambridge. Secy.: E. F. Bliss. Nom. cap.: £3,000.

F. W. HUNT (CORNWALL) LTD.—Regd. Jan. 19, 1961. 58 Clinton-rd., Redruth, Cornwall. Secy.: Eileen M. Hunt. Pblc. wks. contr., etc. Nom. cap.: £20,000.

SAUNDERS BROS. (BUILDERS) LTD.—Regd. Jan. 20, 1961. 70 Wood-gate, Loughborough. Secy.: A. E. Stout. Nom. cap.: £7,000. Bldrs., etc.

ESTIMATING CONSULTANTS (BUILDING) LTD.—Regd. Jan. 20, 1961. 76 Kew-rd., Richmond, Surrey. Secy.: Kathleen M. Harwood. Nom. cap.: £100.

G. A. YELLOWLEY (BUILDERS) LTD.—Regd. Jan. 20, 1961. Buller-st., Felling, Co. Durham. Secy.: G. A. Yellowley, jnr. Nom. cap.: £1,000.

L. W. ALLEN & CO. LTD.—Regd. Jan. 20, 1961. 178 Dudley-rd., Birmingham. Secy.: Doreen A. Allen. Bldrs., etc. Nom. cap.: £2,000.

EASTFIELD CONSTRUCTION CO. LTD.—Regd. Jan. 20, 1961. 324 Hurst-rd., Bexley, Kent. Secy.: Hilda M. Ignatiou. Bldg. sub-contrs., bldrs., etc. Nom. cap.: £100.

COWLES (BUILDERS) LTD.—Regd. Jan. 23, 1961. Nom. cap.: £2,000. Dir.: Charles D. Cowles, 34 Friars Walk, N14.

FRANK RUSSELL (BUILDERS) LTD.—Regd. Jan. 23, 1961. Nom. cap.: £1,000. Permt. dir.: Frank J. Russell, 1 Preston Villas, Bath-rd., Stroud, Glos.

ROMAN (CONTRACTING) LTD.—Regd. Jan. 24, 1961. Bldrs., etc. Nom. cap.: £2,000. Sub.: James C. G. Crichton, 48 Radipole-rd., SW6 (solr.).

FREDERICK HAYES (BUILDING CONTRACTORS) LTD.—Regd. Jan. 24, 1961. 22 Queenswood-ave., Hounslow, Mdx. Secy.: Jeanne P. Johnstone. Nom. cap.: £100.

HORACE GODDARD LTD.—Regd. Jan. 24, 1961. 334 Humberstone-la., Leicester. Secy.: Thos. W. Frith. Bldrs. and contrs., etc. Nom. cap.: £2,500.

REGINALD G. WILLIAMS LTD.—Regd. Jan. 25, 1961. 55 Hyde-rd., Paignton. Secy.: Mary A. Williams. Bldrs. and dectrs., etc. Nom cap.: £1,000.

FANNING (BUILDERS) LTD.—Regd. Jan. 25, 1961. Acme Works, Bunns-la., Mill Hill, NW7. Secy.: Alan E. Wright. Nom cap.: £10,000.

D. S. MACDONALD LTD.—Regd. Jan. 25, 1961. 106 High-st., Harrow-on-the-Hill. Secy.: Hilda M. O'Brien. Public wks. contrs., etc. Nom. cap.: £100.

J. M J. BAMBER (BUILDERS) LTD.—Regd. Jan. 25, 1961. Nom. cap.: £100. Dir.: James Bamber, 12 Laithe-st., Burnley.

JACK GREEN (BUILDERS) LTD.—Regd. Jan. 25, 1961. 59 St. Andrew's-st., Cambridge. Secy.: Barbara Green. Nom. cap.: £100.

SANDRINGHAM CONTRACTORS (DONCASTER) LTD.—Regd. Jan. 25, 1961. Rear of 55 Thorne-rd., Doncaster. Secy.: Joan Terry. Bldrs., etc. Nom. cap.: £1,000.

PLANKS BUILDERS & DECORATORS LTD.—Regd. Jan. 25, 1961. 52 Gloucester-pl., W1. Secy.: M. A. B. Harrison. Nom. cap: £100.

J. & P. QUINN (CONTRACTORS) LTD.—Regd. Jan. 26, 1961. Pblc. wks. contrs., etc. Nom. cap.: £5,000. Dir.: Patrick J. Quinn, 47 Leopold-ave., Birmingham 20.

ERNEST R. BRYANT LTD.—Regd. Jan. 26, 1961. Genl. bldrs., pblc. wks. contrs., etc. Nom. cap.: £100. Dir.: Ernest R. Bryant, 47 Minstead-rd., Birmingham 24.

BOYDELL CONTRACTS LTD.—Regd. Jan. 27, 1961. 84 Colmore-row, Birmingham 3. Secy.: Rosemary V. G. Boydell. Nom. cap.: £250. Bldrs. and contrs., etc.

BELSIZE BUILDERS LTD.—Regd. Jan. 27, 1961. 10 Lincolns Inn Fields, WC2. Secy.: R. M. Patel. Nom. cap.: £1,000.

D. G. AMESS LTD.—Regd. Jan. 27, 1961. 15 Church-st., Old Town, Eastbourne. Secy.: Sheila S. J. Amess. Bldrs., etc. Nom. cap.: £1,000.

BERTON BUILDING CO. LTD.—Regd. Jan. 27, 1961. 281 High-rd., Ilford. Secy.: H. E. F. Britton. Nom. cap.: £100.

Recent British Trade Marks

THE FOLLOWING PARTICULARS, which are extracts from the 'Trade Marks Journal,' are reproduced by kind permission of HM Stationery Office. The 'Trade Marks Journal' may be obtained from the Patent Office, annual subscription £5.

WALTERLUX: 806397. Paints, distempers, varnishes, lacquers, etc. Allen Walters & Co. Ltd., 6a St. John's Hill, London, SW11.

CONVERTO-POL: 811282. Cold-setting lacquers for metal, wood, plastics, plaster and for glass. Plastic Polishes Ltd., 464 London-rd., Croydon, Surrey.

WESTILE: 809122. Glazed tiles made of ceramic materials. Western Counties Brick Co. Ltd., 31 Queen-st., Exeter.

MARBLIQUE: 812886. Glazed tiles made of ceramic material. Woods Tileries (Hanley) Ltd., Park Works, Ogden-rd., Hanley, Stoke-on-Trent.

ETERNA: B804634. Non-bituminous paints, distempers and lacquers, etc. Allen Walters & Co. Ltd., Junction House, 6a St. John's Hill, London, SW11.

CENTRON: 803865. Building materials; and structural forming and supporting devices for use in building; all the aforesaid goods being wholly or principally of non-metallic materials. Dawnays Ltd., Steelworks-rd., London, SW11.

SEVEN DWARFS: 811722. Stones, stone chippings and sand, all included in Class 19. Rowebb Ltd., 113 Douglas-st., Glasgow, C2.

ARROW: 807355. Precast concrete structures and precast articles included in Class 19 made of concrete. British Steel Reinforcements Co. Ltd., 20 Harcourt House, 19 Cavendish-sq., W1.

ZERRIFLOR: 807682. Flooring and floor making materials all included in Class 19. The Phoenix Timber Co. Ltd., Frog Island, New-rd., Rainham, Essex.

COLRAY: 805396. Paints, lacquers and glazier's putty. H. Colgate & Gray Ltd., Meeching Quarry & Works, Newhaven, Sussex.

DILAC: 813617. Lacquers having insecticidal, bactericidal, germicidal or rodenticidal properties. Walter Gregory & Co. Ltd., 23 Fore-st., Wellington, Somerset.

VERNACRYL: 805735. Paints, enamels and varnishes, etc. Hygienic Paint & Varnish Co. Ltd., Calverley-rd., Oulton, Yorks.

RIGITEX: 805939. Flameproof hardboards and partition boards, all for use in internal building construction. C. V. Creffield & Co. Ltd., Leybourne Wharf, Horton Bridge-rd., West Drayton, Middlesex.

LAGTONE: 798949. Bituminous preparations (not in the nature of paint) used in building. Benjamin Foster Company, 4635 West Girard-ave., Philadelphia, USA.

Trade News

Bridges and Telescopes

'THIS IS UNITED STEEL,' a general review of the United Steel Companies Ltd., contains a brief account of the activities of that huge organisation which produces about one-eighth of the steel made in Britain. Lavishly illustrated with half-tones and colour plates it provides a record of the companies' activities in ore mining, coal carbonisation, iron and steel making, research, and manufacture of a wide range of products from watch springs to steel components for the building and civil engineering industries. Of particular interest is the subsidiary, United Steel Structural Co. Ltd., which has been responsible for the design and fabrication of such important structures as the radio telescope at Jodrell Bank for Manchester University, and the Barton Bridge over the Manchester Ship Canal. It is also participating in the erection of Hinkley Point nuclear power station in Somerset. The volume concludes with chapters about extensive operational research, works services, commercial organisation and personnel, and provides some statistics which are indicative of the tremendous output of this group of companies.

International Packaging Exhibition

THE INTERNATIONAL PACKAGING EXHIBITION will be held in the Grand and National Halls, Olympia, London, W14, from September 5 to 15. Newsletters dealing with new products or proposed exhibits will be issued every two or three weeks until the opening of the exhibition. Further information may be obtained from 'Engineering in Britain,' 9 Malcolm-road, London, SW19. The exhibition is being organised by Provincial Exhibitions Ltd. in association with F. W. Bridges & Sons Ltd. in collaboration with the Institute of Packaging.

New Furniture Range

A NEW COMPANY, The Pullman Office Furniture Ltd., of 29/37 Goswell-road, London, EC1, is now manufacturing and distributing wood office furniture. The best features of other types and styles have been incorporated in a comprehensive range of commercial, executive and modular unit furniture. All desks conform to the recent recommendations of the BSI and a special polish has been prepared which gives a tough and durable finish. A factory floor area of over 75,000 sq. ft. is being devoted entirely to the manufacture of this range.

Characteristics of Pitch Fibre Pipes

THE LATEST ISSUE of 'Pitch Fibre Progress,' the quarterly newsletter of the Pitch Fibre Pipe Association, contains items concerning the flow characteristics of pitch fibre pipes, their suitability for domestic wastes, the availability of a wider range of fittings, and their applications in the USA. A special report of the Hydraulics Research Station, DSIR, on pitch fibre pipes is also available. This establishes the proper relationships for pipes between discharge, velocity of flow, diameter and gradient. Copies of both publications may be obtained from the Association, at 27 Chancery-lane, London, WC2.

Aircraft for Executives

J. C. BAMFORD (EXCAVATORS) LTD. took delivery of the first de Havilland Mark 8 Dove executive aircraft to be delivered in Europe, at Hatfield aerodrome on January 24. The aircraft will be used to transport executives between distributors in this country and overseas markets mainly on the Continent.

Materials Handling Conference

THE SECOND INTERNATIONAL CONFERENCE organised by the Institute of Materials Handling will be held from May 10-12 at Southport. Handling problems will be examined under four main activities—agriculture and food production, extractive minerals and chemical industries, heavy industry, and light industries. Two addresses of particular interest to readers of this paper are 'Handling Considerations in Building Construction' by Mr. T. McMillan, chairman of Tarmac Civil Engineering Ltd., and 'Design & Construction for Handling in a Light Industry,' given by Mr. E. H. Firmin, FRIBA. Brochures may be obtained from the Institute at 32 Watling-st., London, EC4.

Pump Assembly, Scotland

RANKIN & BLACKMORE, marine engineers, Greenock, have now started to assemble Stork pumps in Scotland. All sales for Britain are being handled by Smail, Sons & Co. Ltd., 21-23 India-street, Glasgow, from their depots throughout the country. The pump to be produced is the BU type, suitable for industrial purposes, domestic water supply, spraying and horticultural purposes.

Aerated Concrete Units

THERMALITE YTONG LTD. are now producing reinforced roof, wall and partition units at their Birmingham factory. These units are manufactured to the same formula as the company's building blocks, combining Portland cement, sand and pulverised fuel ash. They are cut to shape by a special wire cutting process and have smooth surfaces which can be rendered, as is customary, or painted direct. Alternatively, modern spray plaster finishes can be used. As in the case of 'Thermalite' building blocks, the ease of workability is retained and the material can be screwed, nailed and chased direct. This is of particular importance for suspended ceilings, fascias, gutters and downpipes.

Heating Systems

FOLLOWING AN AGREEMENT with Continue-Flo Heating Products Ltd., of Canada, Johnson & Starley Ltd., of Northampton, announce that a complete range of warm air oil fired furnaces and prefabricated ducting and fittings is now available for industrial, commercial and domestic installation in this country. Continue-Flo furnaces (50,000 to 500,000 Btu) have alloy steel heat exchangers and are fitted with pressure jet burners on all models from 85,000 Btu upwards. A complete layout service is available from the engineering department of Johnson & Starley.

Steel Reinforcement Depots

RICHARD HILL LTD. of Middlesbrough, a member of the Firth Cleveland Group, have established stocks of their Maxweld welded steel wire fabric reinforcement at 14 depots throughout the country. The new depots are at London, Southampton, Birmingham, Tipton, Mansfield, Leicester, Bristol, Leeds, Hull, Rotherham, Manchester, Liverpool, Glasgow and Middlesbrough. The Birmingham office has moved from Somerset House, Temple-st., Birmingham 2 to Norfolk House, Smallbrook, Ringway, Birmingham 5.

Change of Name

G. H. OSBORN BUILDING PRODUCTS LTD. have changed their name to Osma Plastics Ltd. The change will in no way affect the conduct of business and the company will continue to operate as suppliers of plastics building products and as a reinforced plastics trade moulding organisation specialising in mass production.

Change of Address

WOLF ELECTRIC TOOLS LTD. have moved their Newcastle branch from 322 Scotswood-rd. into new and larger premises at 94/96 Heaton-rd.

New Plastics Partnership

THE UNIVERSAL ASBESTOS MANUFACTURING CO. LTD. and Thermo Plastics Ltd., a member of the Tootal Group, have formed, as equal partners, a new manufacturing company, Allied Structural Plastics Ltd., with a capital of £100,000. On the Board of the new company are Mr. James Morrish and Mr. F. R. B. Lockwood of Thermo Plastics and Mr. D. Kirkness and Mr. P. Talbot-Smith of UAM.

Official Notification

Import Duty Drawbacks

THE TREASURY have made the Import Duty Drawbacks (No. 2) Order, 1961, which (a) provides for the allowance of drawback of import duty on the exportation of certain photo-copying machines; (b) increases the rate of drawback of import duty on imported plywood used in the manufacture of exported flush doors; (c) describes more appropriately exported strip and the laminated aluminium foil used in its manufacture; (d) increases the rates of drawback of import duty on imported linseed oil used in the manufacture of specified exported goods (including printers' inks); and (e) varies the rates of drawback of import duty on certain imported square sawn wood and timber and wooden veneer sheets used in making exported sewing machine woodwork of specified types.

The Order came into operation on March 1, and has been published as Statutory Instruments 1961, No. 278.

TECHNICAL REVIEW

This Review of plant, equipment and materials—in most cases new or with new features—is intended to give brief details only of the products mentioned. Notices are based on data supplied by the manufacturers. Additional information and prices can be obtained either direct or by using the prepaid Readers' Service form which appears on page 158 of this issue. The form can be used for more than one inquiry.

1. Cooling Towers

One of the problems resulting from the use of induced draught in a cooling tower is the protection of the FAN against water. Now, following some rigorous running tests of a prototype fan, it is believed an effective answer has been found.

A test rig was erected and a water spray introduced beneath the fan so that the whole assembly was virtually in continuous water spray conditions. The unit was run for ten days and at the end of the run it was taken down, examined in detail, and found to be sound in all respects.

The units generally are one of three types—vertical operation with impeller above the motor, vertical with impeller below the motor and horizontal. Each type consists of four main components, the motor, impeller, duct and support arms. The impellers are made either from aluminium alloy or, in the larger sized fans, plastic covered wood.

The unit is so designed that even though, despite the precautions, water does penetrate where it is not required, the damage is minimised and the fan still capable of operating for a long period of time.

Airscrew Co. & Jicwood Ltd., Weybridge, Surrey.

2. Carports

A lightweight structure for COVERED PARKING has been developed which, among other places, could be used at factories, offices, car parks and railway stations. In essence the 'Carport' is a translucent curved awning, open at both ends and near ground level at the back, supported by cantilevered metal trusses anchored to a concrete base. The roof sheets are of a new resin-bonded glass-fibre material which, though light in weight, is very strong, will not crack, and is non-corrosive. The material is supplied in a range of attractive colours.

The sheets, which are corrugated, are lapped together, each sheet being in one length, 25 ft. from near ground level to front edge of awning. There are no horizontal points. The Unispan trusses are made from rolled steel hollow box sections and the purlins are Z-section. Since the design is sectional, any length of covered parking space can be provided and spans can be erected back-to-back on a common base if required.

Tully Engineering Co., Ltd., Newbridge Works, Newark, Nottinghamshire.

3. Miscellaneous

An attachment to fork lift trucks has been designed to enable PALLET LOADING HEIGHTS to be pre-selected. Called the Autostak, the new patented device is operated simply by pushing a selection button and operating the lift valve lever, which is held electrically until the selected height is reached. It should prove particularly useful for high pallet work or where vision is obscured.

Lipton Products Ltd., Wooburn Green, Bucks.

4. Spraying Equipment

At a recent demonstration in London, a simplified SPRAY SYSTEM was shown for applying rigid polyurethane foam. The foam is made to a special formulation of the Baxenden Chemical Co., Ltd., so that, on application, it quickly expands and hardens to provide a sound thermal insulation. No form of shuttering or battening is needed to keep the foam, which is applied by a patented spray gun, in position.

'Foam-in-place' spray equipment being used for insulating pipework

The process has a number of uses, the most obvious being, perhaps, for low-cost roof insulation. Other applications are the lagging of service pipes, heat ventilation ducts and storage tanks and it would also strengthen plastic and metal panels in cars.

The Aerograph-Devilbiss Co., Ltd., 47 Holborn Viaduct, London, EC1.

5. Heating

A new UNDERFLOOR DRAUGHT FIRE, known as the 'Burnall,' which is capable of burning every known type of fuel, has just come on the market. It has been approved by the Ministry of Power under the Clean Air Act. Like an existing standard model, it is obtainable with three alternative methods of ash-disposal: a lift-out ash-box, an outside ash-pit (both of which need emptying only once or twice a week) or a deep ash-pit, where ash needs emptying only every few months. The new model has a raised front with a hole in the middle for the damper rod and a two-piece gratebottom, each half having three legs.

With the gradual changeover to Smoke Control Areas this fire should prove a useful acquisition.

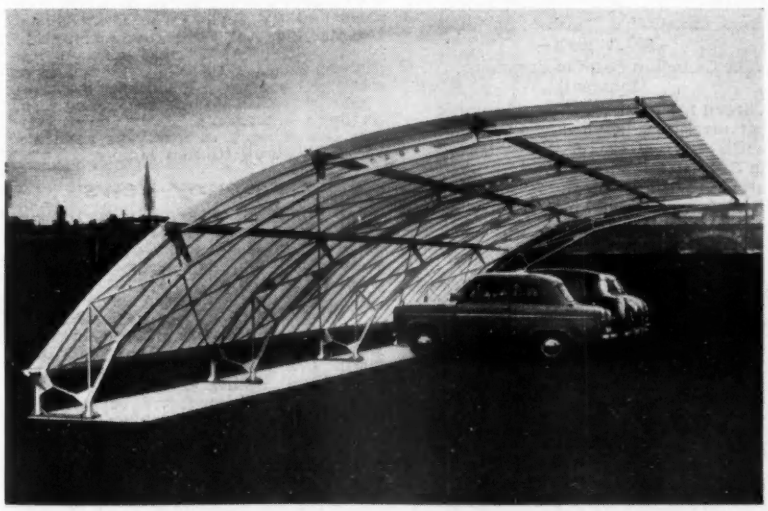
Richard Baxendale & Sons, Ltd., Bamber Bridge, Preston, Lancashire.

6. Wallboard

A stove enamelled WALLBOARD, recently introduced to this country from France, simulates a mosaic tiled design and, as such, it offers a practical alternative to genuine glazed tiling. It wipes clean instantly and is impervious to damp and condensation. It is also untarnishable.

As the wallboard is stove-enamelled and laminated onto hardboard, it is easy to cut, shape and erect.

Robert Sandall (Group Sales) Ltd., 228 High-st., Croydon, Surrey.



The new lightweight 'Carport' which will give any length of parking space

News in Brief

Iron Castings Production

PRODUCTION of iron castings for the building and domestic sections of the industry during 1960 reached 559.6 thousand tons, an increase of 1.9 thousand tons over the figure for the previous year. The small rise, states the Joint Iron Council, was comprised of a significantly greater increase in output for the purely building and construction castings combined with a slight reduction in castings for domestic durable goods. The number employed in the industry at the end of December last was 131,400, some 3,900 more than at the end of December, 1959.

The Late Mr. R. E. Davenhill

THE death occurred on February 8 of Mr. R. E. Davenhill, chairman and managing director of Hinton, Perry & Davenhill Ltd., Pensnett, Brierley Hill, Staffs. He was 63.

Planetarium for Belfast

PLANS ARE NOW COMPLETE for a £75,000 planetarium to be built at Belfast. The planetarium is expected to be completed within a year if approval is given by the board of governors of Armagh Observatory (where it will be erected) and the subscribers to the original project. The scheme already has the approval of the committee set up to consider the plan.

The Late Mr. L. H. P. Meyer

THE DEATH OCCURRED on February 20 of Mr. L. H. P. Meyer, founder, chairman and managing director of Ideal Building & Land Development Co. Ltd. He was in his 58th year. Mr. Meyer was the founder and chairman of Carlton Contractors Ltd., and founder of New Ideal Homesteads Ltd. He was one-time deputy to the engineer and surveyor of Erith UDC.

Paris Home-Making Exhibition

THE THIRTIETH ARTS OF HOME-MAKING EXHIBITION is currently being held at the Palais de la Défense, CNIT, Paris, and will continue until March 19. The object of the Salon des Arts Ménagers, 1961, is to display solutions found in France and other countries for the arrangement, equipment, decoration, and furnishing of private dwellings. In addition to the main display there is the 17th Housing Exhibition, devoted this year to prefabrication; a section on the domestic garden; and a Danish section on industrial art.

Clerks of Works Annual Dinner

THE SEVENTY-NINTH ANNUAL DINNER of the Institute of Clerks of Works of Great Britain Incorporated will be held in the Connaught Rooms, Great Queen-street, London, WC2, on May 13. The principal guest will be Mr. Leonard C. Howitt, MArch, FRIBA.

Domestic Central Heating

A TWO-DAY COURSE on modern methods of central heating for domestic and small premises, organised by the Southern Regional Council for Further Education in conjunction with Berkshire education committee, is to be held on April 6 and 7 at the East Berkshire College of Further Education, Boyne Hill-avenue, Maidenhead. The course has been arranged by the Advisory Committee for Fuel Technology of the Council because of the growing demand for central heating in private houses and small commercial premises. Registration forms, which may be obtained from the secretary of the Council, at 22 The Forbury, Reading, should be returned with the course fee of 2 guineas by Friday, March 24.

Building Block Manufacturers

Output Doubled Since 1954

SPEAKING AT the annual luncheon of the Federation of Building Block Manufacturers in London on March 7, MR. C. REEVE, President, praised the various federations and associations of builders, and the RIBA, for sparing the time to look towards improvements in their organisations, through which the industry was being given a new lease of life.

'Today,' he continued, 'with many of the large companies having become public ones, balance sheets are no longer hidden, and I for one have been glad to see the prosperous indications represented by fair profits and dividends, which have been well deserved, and the answer to energy and hard work in bringing the National and Commonwealth building requirements to fulfilment. Unfortunately, during the past year we have heard of far more jobs being taken at cost, jobs taken only for prestige value, and builders in some areas are greatly concerned about this practice.'

The guest of honour, MR. D. E. WOODBINE PARISH, called for more attention to the fields of technology and human relations. He called the next 25 years a crucial period in the development of the industry. 'Unless,' he continued, 'we are equipped for these years ahead, the industry will suffer a great deal.'

Figures recently complied by the Ministry of Works show that production and sales of building block during 1960 amounted to 35m. sq. yd., and that since 1954 the industry has doubled its output.

Spoutcraig

(LANGDALE PIKES)

Light Sea Green Slate

125,000 sq. ft. used for cladding the Commonwealth's Tallest Building – 600 ft. high –

The Canadian Bank of Commerce, Montreal.

Chosen for its beautiful and unique bar markings, colour and ability to withstand temperatures experienced in Eastern Canada ranging from the arctic to the tropical.

Samples and technical details on request to:

Broughton Moor

GREEN SLATE QUARRIES LTD

CONISTON · LANCS · TEL. 225/6

Personal Column

MR. E. J. PEEL-YATES has been appointed home sales director of the Crittall Manufacturing Co. Ltd. in place of MR. VICTOR ATTWOOD. Mr. Peel-Yates joined the company as a trainee in 1926. Mr. Attwood retains his seat on the board.

MR. C. B. MAXWELL has been appointed director of Abelson & Co. Ltd. with particular responsibilities for work service, spares and after-sales service.

Electrolux Ltd. has appointed MR. MAURICE GOMME to be sales manager for the new Electrolux 'Dishmaid.'

The Pearl Varnish Co. Ltd., manufacturers of flame retardant paints, of Treforest Industrial Estate, Pontypridd, Glam., announce three appointments to their sales organisation. MR. IAN D. MACDONALD, 4 St. Mirren-st., Paisley (tel.: Paisley 4476) will represent the company throughout Scotland; MR. L. KIRKHAM, of Heatherbraye, Smoke Hall-la., Winsford, Cheshire (tel.: Winsford 2675) has been appointed northern area sales manager and MR. E. A. SHERIDAN, of 494 Stanton-rd., Stapen Hill, Burton-on-Trent (tel.: Burton-on-Trent 2544) will cover the Midlands.

Four staff members of Turners Asbestos Cement Co. Ltd. have been presented with certificates and cheques to mark their completion of 25 years' service. They are MESSRS. W. J. MILES, E. E. WILLIAMS, A. D. BASSETT and W. E. KIDDIE.

New appointments in Ghana and Iran are announced by Taylor Woodrow (Building Exports) Ltd., the agents for Arcon structures. MR. DICK ONIONS has taken up residence in Ghana as the company's area representative, and MR. JOHN DIX has been appointed technical area representative to the firm's Teheran office. Mr. Onions takes the place of MR. L. A. FARR, who has joined Taylor Woodrow (Ghana) Ltd.

Company News

THE UNIVERSAL ASBESTOS MANUFACTURING CO. LTD. recommend the payment of a final dividend of 15 per cent (less tax) on the ordinary shares of the company for the year ended October 2, 1960.

J. E. LESSER AND SONS LTD., manufacturers of 'Middlesex' prefabricated buildings, at Hounslow, are changing their name to MIDDLESEX PREFABRICATED BUILDINGS from April. J. E. Lesser and Sons Ltd., will now become the holding company for the JEL GROUP, and will in future be known as J. E. LESSER AND SONS (HOLDINGS) LTD.

THE GEORGE COHEN 600 GROUP LTD., engineers and iron, metal and machinery merchants, have declared an interim dividend of 4¼ per cent (less tax) on the £3,125,000 old ordinary stock of the company payable on March 31, 1961, in respect of the financial year ending on that date.

OVERSEAS BUILDING

From Our Own Correspondents

AUSTRALIA (QUEENSLAND).—A spokesman for Barrier Reef Islands Ltd., a member of the Ansett Transport Industries Group, has stated that under a £350,000 improvement scheme to start shortly, accommodation at Hayman Island will almost be doubled. The work includes the erection of two major buildings and also the construction of a number of detached lodge-type accommodation units.

AUSTRALIA (SOUTH).—The State Government has finalised plans for the construction of a new road bridge over the Port River, westward from the old Port-road, and for the continuation of the old Port-road to St. Vincent-street by way of Church-street, Port Adelaide.

AUSTRALIA (WESTERN). — The international terminal building at Perth airport is to be erected at a total cost of nearly £A½m. It is expected that the building will be finished in time for the 1962 Empire Games.

BRITISH GUIANA.—Four grants totalling £1,269,532 were made in January to the colony under the Colonial Development and Welfare Act. Largest of the grants for British Guiana was £1,163,333 to meet half the estimated cost of the Tapakuma drainage and irrigation project. The scheme aims to develop the Essequibo coast for agricultural purposes by enlarging the lake conservancy (Tapakuma, Capoey and Reliance) and by rehabilitating and extending the drainage and irrigation systems to provide adequate water control for about 36,000 acres between Zorg-en-Vlygt and Somerset/Berks of which only 8,000 acres are at present securely irrigated.

CANADA (ALBERTA). — The Olympic Chinook Club, at Calgary, is to construct a $1.5m. addition, plus curling and skating rinks, on a 15-acre site. . . . Molson's Regina Brewery Ltd. is to construct a $1m. brew house to their present premises. . . . Calgary City Council has approved a Federal Government plan for a $20m. extension to Calgary airport. . . . The Shell Oil Co. has received approval to construct a multi-million-dollar gas processing plant in the Waterton-Pincher Creek area. . . . Additional building scheduled for the City of Edmonton includes: a $1.5m. block of flats; a television studio and office building; a $9.2m. treatment building for the Royal Alexandra Hospital; a $1m. Toronto-Dominion Bank building, and a new co-operative shopping centre. . . . Additional building for the City of Calgary includes: An addition to the Calgary Auxiliary Hospital; a $1m. gymnasium building for Alberta University; and a $15m. hospital at Glenmore Dam.

CANADA (NEW BRUNSWICK). — Structural additions and alterations to the Federal Building at Moncton are to cost $1.6m. . . . The Bank of Canada is to construct a $1m. building on King-street, Saint John. . . . Plans are under consideration for the construction of a bus terminal in downtown Saint John. . . . Two new berths, one 650 ft. and the other 610 ft. long, are to be constructed at Saint John harbour. Completion is scheduled for spring, 1962.

CANADA (NEWFOUNDLAND).—A new $2m. hydro power development project is under consideration for Labrador. . . . Premier Smallwood has announced that consideration is being given for the construction of a third paper mill for Labrador timber.

CANADA (NOVA SCOTIA).—A new wing is to be constructed to the Lord Nelson Hotel in Halifax.

CANADA (ONTARIO).—A copper-sulphate plant, for Border Chemicals Ltd., is to be constructed at Transcona. . . . The City of Kitchener is to construct a $1m., 108-room convention hotel. . . . Tenders have been called for a $3.5m. hospital at Owen Sound. . . . Working drawings for the new Toronto City Hall will be completed by the end of April after which tenders for construction will be called. . . . The Royal Bank of Canada has announced the construction of a new headquarters office building to be erected in Toronto. . . . The Ontario College of Art is planning the construction of an extension to its present premises. Completion is scheduled for next year.

CANADA (QUEBEC).—Authorisation has been obtained, by Canadian National Railways, for the construction of an $8m., 60-mile line into the north-western Quebec mining area.

CHILE.—Under an extensive 10-year plan for national development in Chile, proposed investments in transport include 38,100,000 escudos on new airports and improvements, 498m. escudos on roads, 300,200,000 escudos on State Railways, and 44,800,000 escudos on ports.

CONGO (KATANGA).—President Tshombe, reported to be busily improving roadways and constructing new ones, has called for tenders from Rhodesian firms for undertakings worth £1m.

DOMINICAN REPUBLIC.—A new 100-bed hospital is now under construction at San Cristobal, Dominican Republic. Built in reinforced concrete, the hospital is planned in one two-storey and four single-storey blocks, connected by covered corridors. The services provided include medical and dental clinics, an emergency ward, x-ray department, a theatre for minor operations, dispensary and blood bank as well as the usual ancillary services. A hospital for women with 150 beds is to be built at Salcedo. Costing $318,000 it will be in three self-contained units with separate access for visitors.

GHANA.—To meet the increasing demand for hotel accommodation at Accra an extension wing to the Ambassador Hotel is to be built by Taylor Woodrow (Ghana) Ltd. The new building, for Ghana Hotels (IDC) Ltd., will be completed in 15 months. The extension, 160 ft. long, 48 ft. wide and 60 ft. high, will be connected directly with the existing hotel at ground level by means of a link corridor. The building, on four floors and with a roof garden, will be of reinforced concrete construction, built on the cross walls system with continuous link foundations designed and braced to resist the effects of earth-tremors. Each of the 48 air-conditioned double guest rooms will have its own bathroom and balcony. . . . The Ghana Government on March 3 signed a $10,573,000 contract under which Kaiser Engineers and Constructors will help to build the Volta River hydro-electric project. The company will prepare the detailed engineering design, inspect construction, and procure major equipment. The construction contract for the dam is expected to be awarded in April.

HONDURAS.—A new hotel is being planned for Tegucigalpa by a group of Honduran and foreign investors. Work is expected to start in Colonia Marichal some time during April.

NEW ZEALAND.—The establishment of a £2m. copper mill at Auckland has been approved by the Manukau County Council. The application was made by ICINZ Ltd., who propose to build a factory on a 19-acre site fronting Wiri-road.

NIGERIA.—Arthur Guinness, Son and Co. Ltd. are to build a brewery in Nigeria. Capital investment in excess of £1m. is involved. Since negotiations are still in the early stages no consultants have yet been appointed.

PORTUGAL.—The United States Steel Export Co. and the Portuguese Government have signed a contract for the construction of Europe's longest suspension bridge. The bridge will cross the Tagus River at Lisbon and will take four years to build. It will serve a four-lane highway with provisions for future installation of a double-track railroad. With the main structure stretching nearly 2 miles, the bridge will have a central span of 3,318 ft. and two side spans each of 1,540 ft. The entire project, including access roads, will encompass more than 8 miles of roadway, including many grade-separation structures. The length from anchorage to anchorage will be 7,428 ft. and the deepest pier will extend 270 ft. from the surface of the water to bedrock. The main steel towers, which will support the central span 230 ft. above mean-tide level to permit passage of the largest ships, will rise 625 ft. above the water or 895 ft. above solid rock. US Steel Export is the principal contractor for the project, which was designed by Steinman, Boynton, Gronquist and London of New York City, and the Tudor Engineering Co., of San Francisco. Construction of the main piers and approach roadways will be undertaken by International Morrison-Knudson Co. Inc., and its French associates, Compagnie pour l'Etude et le Developpement des Echanges Commerciaux.

SOUTHERN RHODESIA.—The Southern Rhodesian Water Court on February 15 granted an application from the Government to construct a dam at Bangala, on the Mtilikwe River, near Fort Victoria, at a cost of about £1½m.

SUDAN.—The Minister of the Interior and Local Government has stated that tenders will be invited for the construction of a bridge over the Nile between Shambat and Omdurman.

SCOTTISH BUILDER

Hydro-Electric Board's Report for 1960

THE 1960 annual report of the North of Scotland Hydro-Electric Board, published on February 24, reveals that the year's operations produced a credit balance of £222,595 and that the Board connected 8,690 consumers, increased the capacity of their hydro-electric stations to 875,012 kilowatts, and generated 2,435 million units of electricity. The accumulated deficiency on revenue account has now been reduced to £531,030.

The number of hydro-electric schemes already in operation total 875,012 kilowatts. Schemes at the construction stage total 572,150 Kw and those under promotion and survey, 555,000. Capital expenditure during 1960 amounted to £10,217,753 making a total at the end of the year of £215,516,000. Of this, £153,505,000 was spent on hydro-electric schemes and steam and diesel power stations. Hydro-electric works at the constructional stage include 13 power stations. Civil engineering contracts to a total value of about £1½m. were placed for various works at Loch Awe.

Taking note of the Frejus disaster in France, the Board arranged for special investigations of all their major dams and received very favourable reports from the inspecting engineers.

Housing in January

THE NUMBER of new houses completed in Scotland in January was 2,123, a decrease of 292 compared with January last year. Of the 411,758 houses built in Scotland since the war, 371,117 have been built by public authorities and 40,641 by private builders.

The monthly return of the Department of Health for Scotland and the Ministry of Housing is obtainable from HM Stationery Office, price 3d.

Capital Works Programme

ABOUT £1.5m. may have to be spent by Inverness ratepayers on capital works in the town during the next three years, it was stated by MR. W. J. MACKAY, chairman of the corporation's finance committee recently.

Included in the programme, which has still to be approved, is a new police building which would qualify for a 50 per cent Government grant and certain road schemes which would qualify for a grant of possibly 70 per cent.

Two of these are the widening of Eastgate, which is the main approach road to Inverness from the South and the East, and the laying out of new roads in the Longman Industrial Estate. They are estimated to cost £142,000.

New Buildings

EYEMOUTH BURGH.—Several works in connection with refreshment room, etc., and redecoration of town hall. Usual trades. One undertaking. Applications to Burgh S, Burgh-chbrs., Eyemouth. Dep. £2 2s.

GLASGOW.—Chauser Estates Ltd., of 13-14 Cork-st., London, W1, have applied for planning permission for a block of offices and shops on a site at 11-13 Queen-st., Glasgow, C1. The Corporation is to ask the Secretary of State for Scotland for his views on this application. Architects are Humphrey & Lipski, 13-14 Cork-st., London, W1. . . . British Oxygen Co. Ltd. are to build a new services and amenities building at Polmadie-rd., Glasgow, C5. . . . Alexander Stephen & Sons Ltd. have been given permission to erect an extension to their engine works at Linthouse-bldgs., Govan-rd., Glasgow, SW1. . . . The Sites and Housing Committee of the Corpn. have approved in principle more multi-storey housing developments in the Knightswood and Scotstoun areas of the city. Nine blocks, ranging from 11 to 16 storeys, are proposed on a site next to Knightswood golf course. On the site of Scotstoun-hse. and its grounds, it is proposed to erect 14 blocks, ranging from 7 to 20 storeys. It has been necessary to vary the heights of the buildings as both proposed developments are in line with aircraft landing at Renfrew Airport. There will also be a nursery sch., and almost 100 lock-up garages and over 150 parking spaces.

GLASGOW.—Plans for a 16-storey office block at Broomielaw have been approved in principle by a corporation planning sub-committee. Sponsors of the project are Campbell Henderson (Holdings) Ltd., 220 Broomielaw. The site is between McAlpine-st. and Carrick-st. Architects are Miller & Black, Newton-pl., Glasgow.

GRANGEMOUTH.—Dean of Guild Court has approved plans for a £200,000 bulk cement distribution depot at Falkirk-rd., Grangemouth. Plans were submitted by the Associated Portland Cement Manufacturers Ltd., London.

HADDINGTON ROYAL BURGH.—Reconstruction at Church-st., involving erection of one block (six houses in all). Usual works. Applications to J. McVie, Town-hse., Haddington.

INVERKEITHING ROYAL BURGH.—Modernisation and alteration of four blocks of tenement property in Alma-st., Inverkeithing. Usual works. Applications to TC, Burgh-chbrs., Inverkeithing.

MONTROSE.—A start is to be made this month on a new £103,000 swimming-pool, on a site at The Mall. Designed by J. B. Wingate, Glasgow, the pool will be built by R. Pert & Sons Ltd., Montrose. The pool will be 82½ ft. long and 42 ft. wide, and is expected to be open by May, 1962.

MOTHERWELL & WISHAW BURGH.—Construction of a ¼m. gallon r.c. covered clear water reservoir at High-st., Motherwell. Applications to F. A. Macdonald & Ptnrs., 11 Woodside-ter., Glasgow, C3. Dep. £5.

PERTH & KINROSS CC.—Reconstruction of approx. 1¼ miles of Stirling-Crianlarich trunk road, involving widening, about 20,000 cu. yd. of excavation, 29 ft. span strutted abutment type bridge with r.c. slab deck, mass concrete retaining walls and other works. County S, 57 Feus-rd., Perth. Dep. £5.

ST. ANDREWS.—TC have been given details of the University Development Plan for the North West Haugh, involving the erection of science buildings valued at more than £2m. The proposed floor space of about 268,000 sq. ft. will be used for physics/mathematics, chemistry, geology buildings, and a science library. Space would also be found for three or four halls of residence to accommodate 800 to 1,000 students, a physical education centre, houses for about 80 or 90 additional members of staff and their families and a 20-acre extension to the playing fields. The proposals were unanimously approved by the TC, but decided that planning permission could not be given for other proposals affecting ground not yet owned by the University. The architects are Sir William Holford & Ptnrs., of Liverpool.

THE BUILDER CONSTRUCTION NEWS

Full details of Public Appointments open will be found in the Advertisement pages of this and previous issues.

CONTRACTS OPEN

For some contracts still open but not included in this list, see previous issues. Those preceded by the symbol (A) are advertised in this number. The latest date for the receipt of tenders or applications appears above each paragraph. The symbol (R) preceding each entry indicates that applications must be received by this date.

BUILDING

MARCH 15

LAOISE (Eire) CC.—Erection of fourteen fully serviced houses at Mountmellick, and the erection of six unserviced cottages at 'The Heath' Portlaoise. County Secretary, Courthouse, Portlaoise. Dep. £5 5s.

ULSTER MINISTRY OF COMMERCE.—Construction of factory at Harbour-rd., Kilkeel, Co. Down. Room 30b Chichester-hse., 64 Chichester-st., Belfast 1. Dep. £3.

MARCH 16

(AR) SURREY CC.—Erection of Banstead county sec. sch. County A.

MARCH 17

CLOGHER RDC.—Erection of Council offices at Crossowen, Clogher, Co. Tyrone, with incidental site work. E. C. Harris & Ptnrs., QS, Ulster Bank-chbrs., 171 Crumlin-rd., Belfast 14. Dep. £5 5s.

MARCH 18

(AR) EPPING & ONGAR RDC.—House modernisation at Theydon Bois. E&S. Dep. £2 2s.

(AR) ESSEX CC.—Schoolkeeper's house at Monkwick county sec. sch., Colchester. County A.

MARCH 20

(AR) BRIDGWATER BC.—Fixed price tenders for 30 houses and 46 garages at Sydenham estate. Boro' A. Dep. £2 2s.

(AR) PLYMOUTH CITY C.—Erection of eight dwellings at Ernesettle. City A. Dep. £3 3s.

(A) SHREWSBURY BC.—Fixed price tenders for underground public conveniences at St. Alkmund's-sq. Boro' S. Dep. £2 2s.

MARCH 21

(AR) GATESHEAD CBC.—Erection of 212 dwellings and 60 garages at Leam-la. estate. Gen. Manager & Sec.

MARCH 24

(AR) EAST SUSSEX CC.—Erection of new boiler house and tank tower, etc., at High View House, Uckfield. County A.

MARCH 25

(AR) BATH CITY C.—Erection of five 5/6-storey blocks, each containing 12 maisonettes and six flats. City Planning Officer & A. Dep. £2 2s.

(AR) SWANSEA CBC.—Proposed extensions to Morfydd-hse., Morriston sch. Boro' A. Dep. £5.

MARCH 27

(A) BROMLEY BC.—Erection of 120 brick store sheds to four housing estates. Boro' E.

(A) EDMONTON BC.—Small two-storey factory block at Claverings industrial estate. Boro' A. Dep. £2 2s.

(A) WALSALL CBC.—Fixed price tenders for 13 bungalows at Red House farm estate, Weston-st., two detached houses at Dors-st. and two semi-detached houses at Central-dr. Boro' E&S. Dep. £2 2s.

(A) WING RDC.—Erection of dwellings at Church-st., Wingrave, Bucks. Council's A. Dep. £2 2s.

MARCH 30

(A) MAIDENHEAD BC.—Firm price tenders for extensions to Corpn. depot

buildings at Braywick-rd. Boro' E&S. Dep. £2 2s.

APRIL 4

(AR) STAINES UDC.—(a) Construction of public conveniences at Woodthorpe-rd., Ashford. (b) Construction sports pavilion at Long-la., Stanwell. E&S. Dep. £2 2s. (each contract).

APRIL 5

(A) CAMBRIDGE CITY C.—Extensions to The Carlisle & County High School for Girls. City S.

(A) SHREWSBURY CBC.—Fixed price tenders for a sports pavilion and caretaker's house at Sundorne sports ground. Boro' S. Dep. £3 3s.

APRIL 7

(A) NEWBURY BC.—Erection of 106 houses at Turnpike-rd. estate. Boro' S.

APRIL 10

(A) DARTFORD BC.—Modernisation of 71 houses at Lowfield-st. estate. TC. Dep. £2 2s.

APRIL 14

(A) NORTH RIDING EC.—Erection of a county infants' sch., Ormesby, Middlesbrough. County A.

APRIL 17

(A) MANSFIELD BC.—Erection of 24 flats and ten garages at Sandy-la. Boro' E&S. Dep. £2 2s.

MAY 31

(A) WEST BROMWICH CBC.—Erection of new gram. sch. at Marsh-la. Director of Ed.

SERVICES, PAINTING, MATERIALS, ETC.

MARCH 16

(A) WALLASEY CBC.—External painting of Council houses (eight sections). Boro' A.

MARCH 18

(AR) SWANSEA CBC.—Electrical installation for assembly hall, gymnasium and dining room block at Training College. Boro' A. Dep. £5.

MARCH 22

(AR) DURHAM CITY C.—Services, etc. County A.

MARCH 24

(A) CROYDON CBC.—External painting of Council houses. Housing Mgr.

MUNICIPAL AND CIVIL ENGINEERING WORKS, ETC.

MARCH 16

DOWNPATRICK RDC.—Water extensions No. 129—Laying of 8 m. of 3 in. dia. spun-iron water mains in the Rural District. Offices of Council, Quoile-rd., Downpatrick. Dep. £3 3s.

MARCH 30

NORTH WITCHFORD RDC.—Construction of approx. 3,000 yd. of 6 in. dia. asbestos-cement or stoneware sewers; 900 yd. of 4 in. and 5 in. dia. asbestos-cement rising main manholes, house connections, two pumping stations and a sewage treatment works at Benwick, Cambs., in the North Witchford Rural District of the Isle of Ely. J. H. Haiste and Ptnrs., Ccl's constg. engrs., 20 Wood-la., Headingley, Leeds 6. Dep. £3 3s.

MARCH 28

SUTTON & CHEAM BC.—Surface dressing with refined tar of approx. 60,000 sq. yd. of roads and approx. 6,000 sq. yd. of footpath surface dressing with hot bitumen within the borough. Boro' E&S.

MARCH 29

NORWICH CITY C.—Laying of 3,162 yd. of 24 in. dia. of CI water main along Jessopp-rd./Christchurch - rd./Newmarket-rd./Daniels-rd./Lakenham-rd., Norwich. E&M.

APRIL 8

BLABY RDC.—Construction of extensions to the Narborough and Cosby Sewage Disposal Works. Boro' E&S. Dep. £3 3s.

KETTERING BC.—Laying of 3,300 sq. yd. of pitched carriageway with dense tar surfacing, 1,680 sq. yd. of tarmacadam paving to footways, 880 lin. yd. of 6 in. and 9 in. foul and surface water sewers, 80 lin. yd. of 72 in. dia. pipe culvert, earthworks, and incidental work at Pytchley-rd. industrial site.

APRIL 10

(A) SPALDING RDC.—Donington Sewerage scheme—Contract No. 1. John H. Haiste & Ptnrs., Ccl.'s const. engrs., 20 Wood-la., Leeds 6. Dep. £3 3s.

Contracts Placed

We are glad to receive from architects and quantity surveyors for publication details of contracts placed to the value of £20,000 or over. Such information should reach the Editor as soon as possible after the contract is signed. Names of the architect and other consultants associated should be given.

APRIL 24

(A) CARDIFF CITY C.—Construction of treatment works, concrete reservoir, foreman's house and ancillary works at Sluvad, Panteg, nr. Pontypool, Mon. E. Sluvad, Panteg, nr. Pontypool. Dep. £10 10s.

APRIL 28

MINISTRY OF TRANSPORT.—Construction of approx. 9½ miles of dual three-lane motorway from the Staffordshire Boundary to Holmes Chapel Interchange (A.54), with the associated bridgeworks, drainage works, and alterations to side roads. Scott & Wilson, Kirkpatrick & Ptnrs., constg. engrs., 47 Victoria-st., SW1. Dep. £50.

GENERAL BUILDING WORK (LONDON)

HAMMERSMITH.—Offices and Flats.—The LCC has received a town planning application from Vitamins Ltd. for the erection of shops and flats at Oil Mill-la.

HAMPSTEAD.—Civic Centre Scheme.—The MH&LG has agreed, subject to technical points, to a loan to enable work to begin in the 1961-62 financial year on stage 1 of the Hampstead Civic Centre project at Swiss Cottage. Est. £2 million. This includes swimming bath (£700,000) and a library (£300,000). Plans have been approved by Royal Fine Art Commission. The LCC has still to give planning permission. Architect is Sir Basil Spence.

HEATH ROW.—Airport Buildings.—British European Airways seeks permission from MoAv. for erection of 3-storey catering and cabin services building, est. £500,000, at London Airport.

HOLBORN.—Offices.—LCC has received a town planning application from Dyneley, Luker and Moore for the erection of offices, showrooms and shops at High Holborn/Red Lion-sq./Fisher-st./Eagle-st.

ISLINGTON.—Bowling Alley.—Application to erect a bowling alley, with offices over, at Finsbury Park Empire, has been received by the LCC from Lush and Lester.

KENSINGTON.—Flats.—Douglas Stephen & Ptnrs. have forwarded a town planning application to the LCC for the erection of a 180 ft. high block of flats at Planetree-hse./Duchess of Bedford's Walk.

LEWISHAM. — Planning Applications. — The LCC has received the following town planning applications: Office block with shops and flats at Forest Hill Station (J. G. L. Poulson); houses, flats and garages at Lee High-rd./Belmont Park (Sir W. Holford & Ptnrs.).

LONDON (City). — Police Station. — Farquharson & MacMorran have forwarded a town planning application to the LCC for the erection of a divisional police station at Wood-st./Love-la./Aldermanbury.

TWICKENHAM. — Development. — The Estates Gazette Ltd. propose redevelopment of borough laundry site at Norcutt-rd.

WANDSWORTH.—Housing.—An application for planning permission has been received by the LCC from the BC for the erection of 271 dwellings, etc., at Hazlehurst-rd. / Smallwood-rd. / Blackshaw-rd. / Wimbledon-rd.

WESTMINSTER.—Estate Hall.—City C has approved sketch scheme for a new estate hall at Churchill Gardens submitted by Powell & Moya, architects.

WESTMINSTER.—Planning Applications. —The LCC has received the following town planning applications: Erection of a ten-storey building, with flats over, at Knightsbridge (Daysbridge Investment Co. Ltd.); offices, showrooms, shops and residential accommodation at Park-la./Brick-st./Grantham-pl. (Norman Green); new five-storey building at Victoria-st. (M. Burton Ltd.).

WIMBLEDON.—Theatre Studio.—Notice of deemed planning permission has been issued by Surrey CC in respect of the erection by Wimbledon School of Art of a theatre studio building at the rear of 40 Merton Hall-rd.

WIMBLEDON.—Shops, etc.—BC has given provisional permission to outline application to erect after demolition of existing buildings, a five-storey building on site of 52-54 High-st., comprising basement, shops on ground floor and fourteen residential units above, and parking space for fifteen vehicles at rear.

WIMBLEDON.—Housing.—BS has prepared preliminary schemes for redevelopment of prefab bungalow sites 16-22 (inclusive) Princes-rd., and 14, 16 and 16a South Park-rd.

WIMBLEDON.—Flats.—BC has given provisional permission to outline applications, as follows: Erection on site of 78 Cambridge-rd., after demolition of existing house, of three-storey block of nine two-room flats, with nine garages at rear; erection at 4 Darlaston-rd., of three-storey block of nine three-room flats with nine garages at rear; also consent given to erection of three-storey block of nine flats and nine garages at 6-8 Trinity-rd.

WIMBLEDON.—School.—BC has notified County Planning Officer that it has no objection to use of land at rear of 27 Copse-hill, for purpose of a new RC primary school.

WOOD GREEN.—Planning Consent.—BC has given planning consent for an extension to Barratt's factory in Mayes-rd. by a five-storey building, which would provide offices, loading bay, storage and engineering shop. The application was made by the Caxton Chocolate Co. Ltd.

(PROVINCIAL)

ASHTON-UNDER-LYNE. — BC propose erection of new bus station in Town Centre. Est. £103,000.

BELFAST.—The Harbour Commissioners have put before Parliament a Bill seeking authority to undertake various works, the total estimated cost of which is £8m. Several works are imminent, such as the wharf to serve the factory under construction at Herdman Channel by Messrs. Richardsons Fertilisers Ltd., and harbour and dredging and

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other works in connection with the proposed oil refinery. Under existing powers the Harbour Commissioners are proceeding shortly to construct a 1,000-ft. wharf, with a large transit shed, on the west side of Victoria Channel to augment the deep-water accommodation for growing foreign trade. (This, indeed, marks the beginning of a new phase in the development and expansion of the port—our last programme, which was commenced in 1956, being now almost completed at a cost of £4m.,' said Sir Kenneth Sinclair, the Harbour Commissioner's chairman.)

BLACKPOOL.—The Planning & Development Committee have approved a £500,000 modernisation scheme for the frontage of the Blackpool Tower building.

BLACKPOOL.—BC propose erection of new open air school. . . . ABC Ltd. propose erection of cinema bowling centre on site of Hippodrome Theatre. . . . W. H. & J. Airey propose erection of 19 flats/garages at Clifton-drive.

BURY.—CoE Auth. seeking site for erection of new Anglican Church in Brandlesholme area.

CHEPSTOW (Mon.).—RDC are to carry out a £320,000 sewerage scheme in the development of Caldicot, where large numbers of council and private houses are to be built. The scheme is to start in June and is scheduled to be completed within nine months.

COOKHAM.—Plans are in hand for conversion of disused Wesleyan Chapel into modern well-lit art gallery as National Memorial Gallery for Sir Stanley Spencer. . . . RDC propose 24 houses at Milley-la., Waltham, St. Lawrence.

CRAMLINGTON (Northumberland). — Dowsett Engineering Construction Ltd., Dowsett-hse., Durham-rd., Gateshead, are to erect offices, workshops and stores on the old Cramlington aerodrome.

DARLINGTON.—TC is to borrow £85,164 for the erection of 44 houses and the construction of road works on the Firth Moor estate.

ECCLES.—BC propose erection of 192 flats on various sites. . . . Kenton Supermarkets Ltd. propose converting billiards hall at Liverpool-rd. into store. . . . F. W. Woolworth & Co Ltd. propose new store premises at Church-st.

EPSOM.—Surrey CC propose new ambulance station at Church-st.

ESTON (Yorks.).—Vaux & Associated Breweries Ltd., The Brewery, Sunderland, are negotiating for a site at South Bank on which to erect new hotel. . . . UDC is to erect 106 old people's bungalows. N. C. Harrison, surveyor.

FIFIELD.—CoE Auth. propose new Mission Church.

GATESHEAD.—Newcastle Breweries Ltd., Haymarket, Newcastle-on-Tyne, propose PH in Beacon Lough-rd. Outline plans have been prepared by the firm's own architect. . . . Plans are under consideration for the erection of a block of shops in Durham-rd. for Ceres Investments Ltd., Gloucester. Architects are Bartlett and Gray, Castlegate-chbrs., Nottingham.

HEBBURN (Co. Durham).—UDC has received loan sanction for £119,608 for erecting 65 dwellings at Station-rd., £55,695 for 39 houses at Hebburn Quay, and £48,331 for installing wash basins and heating and hot water supplies in old houses.

HERTFORDSHIRE.—CC has approved plans for Hertford's new fire and ambulance station, and divisional and brigade headquarters. The buildings will be four storeys high and will cost £193,000. They are subject to Home Office approval. Work is expected to start next year. . . . The CC has also agreed to the erection of a new home for the aged and infirm at Welwyn Garden City at a cost of £64,670.

HURSTPIERPOINT (Sussex).—Cuckfield RDC has approved a new study block at Hurstpierpoint College. Application made by the Governors.

HYDE.—Further Education Committee to seek further accommodation at Technical & Arts School.

KINGSTON-UPON-THAMES.—BC propose erection of following dwellings in 1961: 17 maisonettes and 28 flats at Acre-rd.; 4 bedsitting units, 20 flats and 8 maisonettes at Surbiton-rd. and Penrhyn-rd.; 12 bedsitting units at 22 Gloucester-rd.; approved layout for 4 terraced houses, 4 flats, 4 bedsitting units and 12 maisonettes in one block at The Bittoms development.

KIRKBY.—Lancs. CC propose erection of central library. Est. £110,384.

KNUTSFORD.—UDC propose extensions to library.

LANCS.—Following for EC during 1963/64; Sec. schools at Ridge, Lancaster/Accrington/Padiham/Hindley/Luzley Brook, Royton; new grammar sch. at Ashton-in-Makerfield. 1,400,000 est.

LANCASTER.—TC propose erection of new police headquarters at George-st.

LEEDS.—Following for TC: 23 storey flats/dwellings at Greenside; public abattoir/wholesale meat market at Greenside; extensions at Airport passenger hall; additional accommodation at Shadwell School for Boys. . . . The Senate propose major extensions to Leeds University.

LITTLEHAMPTON (Sussex).—Tennis court site of nearly 60,000 sq. ft. with planning permission for multi-storeyed blocks of up to 96 flats and 2 penthouses, is to be sold by auction.

LIVERPOOL.—The Housing Com. are considering their future policy in regard to building multi-storey blocks of flats and maisonettes, and have authorised the preparation of detailed plans for 25 blocks.

LLANRWST.—Denbigh EC propose erection of new sec. mod. sch. at Plas Cae'r Groes site.

LUDLOW.—Tomkinsons Ltd., Kidderminster, propose erection of new carpet factory on 5-acre site at Fishmore.

LUTON.—Norwich Union Insurance Societies propose new offices at site of Cresta Ballroom, £250,000 estimated. Architects, Howell and Brooks, 4 Queen Victoria-st., London, EC4.

LYDIATE.—Lancs. EC propose erection of new Northway county sch.

LYMINGTON (Hants).—County Planning Committee is recommended to approve plans submitted by Wellworthy Ltd. for the erection of new 14,000 sq. ft. research development block at their Ampress Works.

LYTHAM ST. ANNES.—Matthews & Turner Ltd. propose erection of six sd houses, three shops with flats over and three garages at Heeley-rd. . . . Anderson & Moss Ltd. propose erection of nine detached bungalows at Elmhurst-rd. . . . J. E. & T. L. Harrison propose three bungalows at Ashley-rd. and three bungalows at Kilnhouse-la./four bungalows at Crosland-rd. north. . . . Modern Linens Ltd. propose conversion of No. 8 North Promenade to form eight flats/eight garages. . . . Mr. C. Maden proposes erection of five pairs of sd bungalows at Crosland-rd. north/two pairs of sd bungalows at Ramsgate-rd. . . . Albion (Property Investments) Ltd. propose erection of multi-storey flats at Heyhouses-la.

MANCHESTER.—BLL Estate Co. Ltd. propose erection of five shops with flats over/25 garages at Burnage-la., Burnage. . . . TC propose overspill development at Sale, Bredbury & Romiley areas.

MARPLE.—UDC propose erection of dwellings at Norwood-ave, High-la.

MIDDLESBROUGH.—P. R. Middleton & Partner, 111 Albert-rd., Middlesbrough, have been appointed architects for a proposed branch library at Whinney Banks, Middlesbrough, for TC.

MONMOUTHSHIRE.—CC are to build three homes for the aged at Nantyglo, Risca and Creosyceiliog, which will cost from £60,000 to £70,000 each.

NEWCASTLE-ON-TYNE.—City C proposes £80.000 old people's home on the Montagu Estate. . . . Plans have now been approved for the erection of a new science and mathematics block at Eldon-pl. for the Council of King's College. The architects are Richard Sheppard, Robson & Ptnrs., 5 Southampton-pl., London, WC1.

NEWCASTLE-UNDER-LYME.—BC propose erection of new civic centre at The Brampton. Est. £99,000.

NORTHWICH.—Following for UDC: Central area redevelopment property acquired, £30,000 est.; improvement to market, £14,000 est.

REDCAR.—TC is planning the erection of another 42 flats.

RHYL.—Marston Lubricants Ltd., Birkenhead, to have Government built factory.

RICHMOND.—BC propose 192 dwellings and 48 garages at Ham-cl., Ham.

RIDDLESDEN.—West Riding EC propose erection of new infants' sch. Est. £36,000.

RINGWOOD & FORDINGBRIDGE (Hants.).—RDC's Housing Com. is to submit programme of 109 houses to MH&LG for approval for 1961.

ROCHDALE.—Whelmar Property Co. Ltd. propose erection of 117 dwellings off Woodhouse-la. . . . J. W. Lees & Co. Ltd. propose erection of new public house/car park at Fletcher-st.

SALISBURY & WILTON.—Wiltshire CC have given planning permission for erection of three sec. mod. schools and one prim. sch. in RDC area, and to extensions to existing Laverstock sch. . . . MH&LG has approved RDC's programme of 80 dwellings for coming year, provided tenders are approved by 31/12/61.

SEDGLEY.—Ansells Brewery Ltd. propose extensions and alterations to Park Hall Hotel, Goldthorn Park.

SHEFFIELD.—Town & City Properties Ltd. propose erection of supermarket on site of Heeley Coliseum. . . . TC propose erection of 205 houses/143 maisonettes/59 flats/13-storey point block flats/public houses/shops at Middlewood-rd. development site.

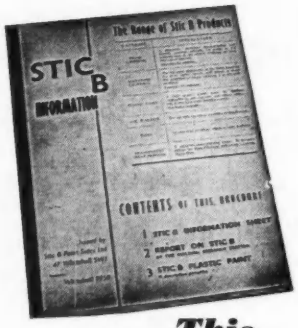
SHREWSBURY.—BC propose erection of new abattoirs, adjacent livestock market. Est. £161,000.

SKELMERSDALE.—F. & J. Helliwell propose residential development at School-la.

SLOUGH.—Berks. EC approved erection of Langley RC prim. sch. Est. £63,837.

SOUTHAMPTON.—Senate of the University propose new Nuffield Theatre, est. £120,000. Architects are Basil Spence and Partners, 1 Canonbury-pl., London, N1.

SOUTHALL.—Kearley and Tonge Ltd. propose extensions to factory at Brent-rd. Plans by own architect, M. N. Keating, Mitre-sq., London, EC1.



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STANDISH.—CoE Auth propose erection of new school. Est. £34,000.

STOCKPORT.—Following for BC: The 2nd phase of extensions at College of Further Education, £290,630 est.; 260 flats in multi-storey blocks at Wellington-rd. south clearance area; erection of shops at Brinnington housing estate; adult training centre/day nursery/two hostels for mentally infirm during 1961/62.

SWANSEA.—Work is to start early in October on a revised stage II of Singleton Park Hospital, which will cost £1¼m. and provide accommodation for 256 patients. Two wards, each with more than 100 beds, radiotherapy department, four operating theatres, and kitchen facilities are included in this next stage. The first stage of the hospital—an out-patients department—has already been completed.

ULVERSTON.—UDC propose erection of aged persons' accommodation at Fell-st.

WAKEFIELD.—Broadhead & Sons (Wakefield) Ltd. propose residential development at Aberford-rd.

WALLINGFORD.—RDC propose erection of houses for National Institute for Research in Nuclear Science.

WOKING.—TC approved plans for: petrol station, showroom and repair shop at 131-139 Goldsworth-rd. for Hazelmere Motor Co. Ltd.; 202 terraced houses, 46 semi-detached houses and 248 garages between Inkerman-rd. and Lower Guildford-rd. and 12 houses off Hermitage-rd., Knaphill, for Knaphill Developments Ltd.; approved expenditure of £44,240 for modernisation of pre-war council houses. . . . Surrey EC propose erection of new jun. and infts.' schools at Heathside-rd. and Hook Heath.

WOKING.—UDC approved plans for 32 dwellings at Old Oaks, Poplar-rd., for Mr. D. G. Parfitt.

WOODLEY (Berkshire).—360 dwellings, a block of garages, and six central shops, are to be erected on the Colemansmoor estate, Woodley.

WORKINGTON.—J. Leslie & Son, Whitehaven, propose erection of 59 dwellings at Stainburn.

WOTTON (Surrey).—Quaker Oats Ltd. propose offices, conference room, library, turkey broiler house and Danish piggery.

TENDERS

(A) Denotes *accepted*.
(PA) Denotes *provisionally accepted*.
(RA) Denotes *recommended for acceptance*.
(AM) Denotes *accepted subject to modification*.
(GD) Denotes *accepted subject to approval by appropriate Government Department*.

BARNSLEY.—Erection of 100 dwellings at St. Helen's estate, and eight bungalows at New Lodge estate, both for BC. (A) Direct labour.

BATH.—Erection of 94 dwellings, 35 garages and laundry at Snow Hill redevelopment area for TC. (A) A. Wills & Sons Ltd., 15 Argyle-st., Bath, £227,417.

BELFAST.—Erection of administrative block for Northern Ireland Government. R. H. Gibson, architect. (A) Higgs & Hill Ltd. Est. £1¼m.

BELFAST.—Erection of a hall in Park-rd. for Cooke Centenary Presbyterian Church. Gordon McKnight, architect. (A) Sloan Bros. (Contractors) Ltd., 16 Gt. Northern-st., Belfast. Est. £30,000.

BIRMINGHAM.—Following for City C: Erection of extensions at Bournville boys' technical sch. (A) W. J. Whittall & Son, £21,339. Erection of four classrooms at Goodwin prim. sch. (A) Direct labour, £16,754. Extensions to Hunters Hill Open Air sch. (A) J. Bowen & Sons Ltd., £27,294. Second phase of Teachers' Training College. (A) W. J. Whittall & Son, £211,355. Erection of 258 dwellings and 2 garages at Barnes Hill estate. (A) A. Langley Ltd., £609,400.

BISHOP AUCKLAND. — Provision of nurses' teaching unit at the General Hospital. Fennell & Baddiley, architects. (A) T. Manners & Sons Ltd., £12,988.

BOLTON.—Alterations to mill at Slater-st. for Tillotsons Mouldings Ltd. (A) John Dickinson & Co. (Bolton) Ltd.

CAMBERWELL.—Erection of 23 dwellings on various sites for MBC. (A) H. T. Oliver & Sons, £56,897.

COLNBROOK.—Extensions to factory for Procea Products Ltd. (A) Norman Sinclair Ltd., Denmark-hse., Denmark-rd., London, W13.

CROSBY.—Erection of 15 bungalows for aged persons at Little Crosby-rd. for BC. (A) S. Byron Ltd., 2a Piercefield-rd., Formby, Lancashire, £19,395.

DARLINGTON.—Phases 2 and 3 of new College of Further Education for CBC. Boro' A is F. Tornbohm. (A) F. Shepherd & Son Ltd., York, £228,411.

DARLINGTON.—Additions to College of Further Education for EC. (A) Shepherd & Sons, Blue Bridge-la., York, £228,411.

DARWEN.—Extensions to grammar sch. for Lancs. EC. (A) Wm. Livesey & Sons Ltd., Blackburn, £64,492.

DOLGELLAN.—Sewerage disposal work at Llanegryn for RDC (A) Rees & Kirby, £37,900.

DURHAM.—Erection of fire station at Swalwell for CC. (A) D. Glen Ltd., 84 Albert-rd., Jarrow, Co. Durham, £46,881 (in lieu of tender withdrawn).

FAVERSHAM. — Erection of 14 old people's bungalows and communal lounge, etc., at Upper Grents for BC. Boro' E&S is C. E. Richardson. (A) R. M. Brookes Ltd. The Square, Lenham, Kent, £21,768.

GLOUCESTER.—A new wholesale house for W. H. Smith and Son Ltd., which is to be erected at Eastern-ave., Gloucester, is to be built by Ford and Weston Ltd. of Imperial-sq., Cheltenham and Derby. The architect is Mr. H. F. Bailey, Chief Architect for W. H. Smith and Son Ltd., and the quantity surveyors are L. F. Jack and Partner, 221 Temple Chambers, Temple-ave., London, EC4. The contract valued between £90,000/£100,000 has been signed. This corrects information given in our last issue.

HALIFAX.—New commercial garage at New-rd. for Halifax Motor Co. Ltd. (A) Pickles Bros. (Builders) Ltd.

HAMMERSMITH. — Conversion and modernisation of Hammersmith Day College. Hammett & Norton, architects. (A) F. R. Freeman Ltd., London, NW1.

LANCASTER. — 1st phase of market redevelopment for TC. (A) Warren Construction Co. Ltd., Carnforth, £50,422.

LEEDS. — Multi-storey offices at East Parade for Yorkshire City Properties Ltd. (A) Bovis Ltd., London, W1, £541,000.

LIVERPOOL. — Extensions to works at Banks-la. for Davies, Pritchard & Richmond. (A) G. Leatherbarrow Ltd. Car showroom and two flats at Daulby-st. for Daulby Garage. (A) Geo. Platt & Sons Ltd. Extensions at Vernon-st. for Hayes & Finch Ltd. (A) Sir Alfred McAlpine & Son Ltd., Wirral, Ches.

LONDON CC.—Construction of super structure of block 1 and foundations and superstructure of block 2, etc., at Arcadia-st. site, Poplar. (A) F. Dilton (London) Ltd., Kent, £242,326. Construction of flats, shops and other works at Arrow-rd. area, Poplar. (A) B. Sunley & Sons Ltd., Westminster, £125,465. Construction of blocks B1, C1, C4 and C5 of flats, etc., at Avebury estate, Bethnal Green. (A) Rowley Bros. Ltd., Tottenham, £94,850. Construction of flats, maisonettes, tenants' stores, transformer chambers, etc., at Bemerton estate, Islington. (A) Tersons Ltd., Finchley, £387,628. Construction of blocks A and B, etc., at Caroline estate, Hammersmith. (A) Halse & Son Ltd., Woolwich, £73,512. Construction of dwellings, etc., at Carlton Vale site, Paddington. (A) Tersons Ltd., £355,309. Construction of dwellings at Cleveland estate, Stepney. (A) Rowley Bros. Ltd., £190,860. Erection of six blocks of flats and eight terrace house blocks at North-dr. site, Faylands estate, Wandsworth. (A) Tersons Ltd., £482,784. Construction of blocks 1 and 2 of dwellings, etc., at Fenwick-pl. site, Lambeth. (A) Wilson Lovatt & Sons Ltd., £482,784. Erection of 71 houses and 38 garages, etc., at Haverhill, Suffolk. (A) Rush & Tompkins Ltd., Sidcup, Kent, £157,936. Construction of three blocks of dwellings, garages, etc., at Locksley estate, Stepney. (A) W. J. Marston & Son Ltd., Fulham, £114,430. Construction of dwellings, tenants' stores, etc., at Maida Vale site, Paddington. (A) Tersons Ltd., £919,808. Erection of flats, garages, cottages, etc., at Rivaz-pl. site. (A) W. J. Jerram Ltd., East Ham, £74,703. Construction of library block, etc., at St. Martin's estate, Lambeth. (A) Anglo-Scottish Construction Co. Ltd., Wimbledon, £35,422. Construction of dwellings, etc., at Rosemary-rd. site, Camberwell. (A) Kirk & Kirk Ltd., Wandsworth, £841,033. Construction of blocks 1-14 and other work, and Czar-st. sites, Deptford and Greenwich —construction of blocks 1, 2, 3, 7 and 8 and other work at Shooter's Hill-rd. site, Greenwich. (A) Rush & Tompkins Ltd., Sidcup, Kent, £705,879. Construction of blocks 1, 2, 8 and 9, garages, tenants' stores, and incidental works at Southampton estate, Camberwell. (A) Tersons Ltd., Finchley, £244,540. Construction of blocks 3, 4 and 5 and other work at Wilson-gr. site, Bermondsey. (A) Thomas McInerney & Sons Ltd., Watford, Herts., £62,620.

(GD) LONDON (Air Ministry).—Contracts to the value of £4,000 or over for week ended March 3: *Building work:* Bentwaters, Woodbridge, Suffolk; Messrs. Sadler & Sons, Richmond-rd., Ipswich, Suffolk. Wittering, Northants.; E. Bowman & Sons Ltd., Cherryholt-rd., Stamford, Lincs. Digby, Lincs.; Frank R. Eccleshare Ltd., Dixon-st., Lincoln, Lincs. Lakenheath, Suffolk; Thomas C. Stewart (Contractors) Ltd., The Industrial Estate, Newmarket-rd., Bury St. Edmunds, Suffolk. Coningsby, Lincs.; A. Monk & Co. Ltd., PO Box No. 4, Stamford, Lincs. *Artificers' work:* Exeter Airport (Devon), etc.; Humphreys Ltd., Market-rd., Plympton, Plymouth, Devon. *Runway Construction, etc.:* Turnhouse Airport, Edinburgh 12; The Limmer & Trinidad Lake Asphalt Co. Ltd., Trinidad-hse., Crewe-rd. north, Edinburgh 5.

(GD) LONDON (Admiralty).—Particulars of contract over £4,000 in value: *Warwickshire:* Re-roofing and ancillary work; H. Clarke & Sons Ltd., Coventry.

(GD) LONDON (British Railways).—Contracts placed by Southern Region: Remedial works to Slip at 4m. 63chs at Honor Oak Park; Aubrey Watson Ltd., Henley-on-Thames, Oxon. Site investigation at Cannon Street Station; George Wimpey & Co. Ltd., Hayes, Middx. Construction of new staff canteen at Ashford-Chart Leacon, electrical carriage repair shop; John Mowlem & Co. Ltd., Ashford, Kent. Sheet piling to slip at Nunhead; Demolition & Construction Co., London, SW1. Reconstruction of Beaver-rd. bridge at Ashford (Kent); John Mowlem & Co. Ltd., London, SW1. Erection of steel gantries and supply and erection of concrete carriage servicing stages at Ashford (Kent);

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Demolition & Construction Co., London, SW1. Strengthening of harbour wall at Fremington Quay; Aubrey Watson Ltd., Henley-on-Thames, Oxon. New staff accommodation at Folkestone Junction; R. J. Barwick & Sons Ltd., Dover, Kent. Dismantling of water tank at Faversham; R. Corben & Son Ltd., Maidstone, Kent. Repairs to bridge at 12m. 65chs at Barcombe Mills; A. E. Farr Ltd., Westbury, Wilts. Installation of central heating & HWS at Exmouth Junction MPD; Mumford, Bailey & Preston, Bournemouth, Hants.

(GD) LONDON (Metropolitan Police).—Recent contract placed: Erection of boundary walls, site clearance, etc., prior to erection of new Section House at Willow Way, Sydenham, SE26; Robert Hart & Sons Ltd., £6,278.

(GD) LONDON (MoW).—Contracts placed for week ended February 25: *Buckinghamshire:* Erection of Crown-bldg., Slough; Y. J. Lovell (Bucks) Ltd., Marsham-la., Gerrards Cross. *Hertfordshire:* Alterations and adaptations to Head Post Office, 63-75 High-st., Barnet; E. J. Lacy & Co. Ltd., Steele-rd., London, NW10. Demolition of boiler house and construction of new access roads at Building Research Station, DSIR, Garston, Watts.; C. Knight, 365 Watford-rd., St. Albans. *Kent:* Erection of telephone exchange extension, Bexleyheath; S. G. & M. Agombar, 109 Elmers End-rd., Beckenham. Alterations to Branch Post Office, High-st., Sidcup; Herbert Richardson & Sons Ltd., Slade Green, Erith. *Lancashire:* Erection of automatic telephone exchange, Hall-la., Maghull; David Lesley (Contractors) Ltd., 9 Chapel Walks, South Castle-st., Liverpool 1. Fencing, gates at Hindley Security Training Prison, Bickershaw, Wigan; Wettern Bros. (Manchester) Ltd., Chorlton-cum-Hardy, Manchester 21. *London:* Conversion of boiler plant at Fortress-hse., Savile-row, W1; G. N. Haden & Sons Ltd., 7-12 Tavistock-sq., WC1. Erection of sub-district office, Balham-grove, SW12; Haymills (Contrs.) Ltd., Hanger Green, Western-ave., W5. *Middlesex:* Erection of County Court, Brentford; Carlton Contractors Ltd., Carlton-hse., Epsom, Surrey. *Surrey:* Alterations of Joint Office Building, 14a London-rd., Croydon; Howe & White Ltd., 35 Manor-rd., Wallington. Temporary hutted accommodation at Inland Revenue Office, Lynwood-rd., Thames Ditton: F. Pratten & Co. Ltd., Norton Hill, Midsomer Norton, Bath, Somerset. *Warwickshire:* Erection of Crown-bldg., Church-st., Nuneaton; W. D. Randall (Hartshill) Ltd., Hartshill, Nuneaton.

LYTHAM ST. ANNES.—1st phase of St. Leonard's-rd. county sch. for Lancs. EC. (A) R. Parker & Son (Catterall) Ltd., £38,254.

MAIDENHEAD.—Erection of Furze Platt county mod. sch. for Berks. CC. (A) Halfacre & Young Ltd., Holyport-rd., Maidenhead. £176,578.

MIDDLESBROUGH.—Erection of Methodist Church at Nunthorpe. Architects are P. R. Middleton & Ptnr., 111 Albert-rd., Middlesbrough. (A) G. W. Lazenby & Co. Ltd., Ferryhill, Co. Durham, £30,000. Construction of roads and sewers on the East Middlesbrough industrial estate for TC. (A) Direct labour, £36,000.

MILL HILL.—Extensions to Command workshops. (A) F. R. Freeman Ltd.

PLYMOUTH.—Erection of an open-air sch. at Whitleigh for City C. Designed by H. J. W. Stirling, City A. (A) A. N. Coles (Contractors) Ltd., £54,240.

PLYMOUTH.—Erection of a sec. sch. at Devonport. Designed by H. J. W. Stirling, City A. (A) Hill & Lang (Plymouth) Ltd., 32 Wolsdon-st., North-rd., Plymouth, £168,964.

SHEFFIELD. — Erection of nine-storey offices at Glossop-rd. for Husband & Co. (A) George Longden & Sons Ltd. Erection of 194 maisonettes/88 garages at Rolleston neighbourhood unit for TC. (A) Ackroyd & Abbot Ltd., £437,351.

SOUTH SHIELDS.—Erection of 112 houses and 14 garages at Simonside for TC. (A) W. Veti (Builders) Ltd., Station-rd., Fulwell, Sunderland, £159,848. Erection of six shops and flats, five houses and two garages at Whiteleas for TC. (A) Robson Brothers (Contractors) Ltd., Chichester-rd., South Shields, £38,524.

SUNDERLAND.—Construction of roads and sewers at Town End Farm estate (phase 3) for TC. (A) W. T. Wallace & Son Ltd., William-st., Gosforth, Newcastle-on-Tyne, £95,911.

SWANSEA.—Extension to premises for Globe & Simpson Ltd. H. A. Ellis & Son, architects. B. W. Ellis, quantity surveyor. (A) Griffith Davies & Co. Ltd., Swansea.

WALTON-ON-THAMES. — New office building at Station-ave. for Birds Eye Foods Ltd. Sir John Burnet, Tait & Ptnrs., architects. (A) Higgs & Hill Ltd., £1¼m. (approx.).

WESTMINSTER.—New information office at Edgware-rd. (A) F. R. Freeman Ltd.

WESTMINSTER. — Conversion of the Strand Palace Hotel, WC2, for Strand Hotel Ltd. F. J. Wills & Son, architects. (A) Holland & Hannen and Cubitts (Gt. Britain) Ltd., £150,000.

WHITTLESEY.—Erection of six 'Homeville' bungalows at South Green for UDC. (A) L. Peat, Cambs.

WOKINGHAM.—Erection of 31 dwellings at Waterloo-rd. for BC. (A) Francis Bros. (Builders) Ltd., 11 Armour-rd., Tilehurst, Reading, £63,500.

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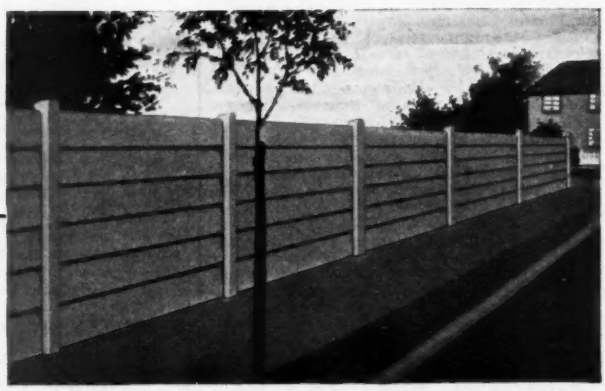

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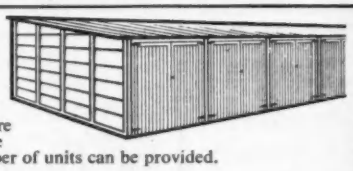

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